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# New High School for Medowie

## Transport and Accessibility Impact Assessment

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# New High School for Medowie
# Transport and Accessibility Impact Assessment

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| Rev | Date | Details |
|---|---|---|
| | 01/11/2024 | Draft submission |
| A | 17/12/2024 | WIP updates to address comments |
| B | 14/01/2025 | Draft pending finalisation of the design |
| C | 21/01/2025 | Submission with final design |
| D | 31/01/2025 | Final submission |

| | Name | Date | Signature |
|---|---|---|---|
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# 1 Introduction

This Transport and Accessibility Impact Assessment (TAIA) has been prepared to support a Review of Environmental Factors (REF) for the proposed New High School for Medowie (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

The activity will be carried out at 6 Abundance Street, Medowie (the site). The purpose of this report is to assesses the impacts on local traffic, parking and access arrangements, and provides recommendations and mitigation measures to minimise the impacts.

## 1.1 Project context

The New High School for Medowie will be located in the township of Medowie, within the Greater Hunter region and Port Stephens council area, an approximately 40-minute drive north of Newcastle. According to the Hunter Regional Plan 2041 (NSW Government, 2022), the region is envisioned to be a leading regional economy with significant population and housing growth by 2041. The population of Medowie is also projected to increase to 15,000 by 2040 (current population of 10,879, Australian Bureau of Statistics 2021), as more people and businesses move to the area (Medowie Place Plan, Port Stephens Council, 2023). The proposed Medowie High School will support this growth, providing educational facilities for current and future residents who would otherwise be required to travel further south to access secondary education, such as in Raymond Terrace or Newcastle.

A Rapid Transport Assessment (RTA) was previously developed by the Department of Education (DoE) and WSP, providing a high-level assessment of the proposed activity with regards to active and public transport connectivity. Building from the recommendations provided in the RTA, the design of the New High School for Medowie has been further refined. This Transport and Accessibility Impact Assessment (TAIA) has been developed to assess the impact of the activity on the local transport environment including traffic, active and public transport and parking conditions. This has been developed in conjunction with a School Travel Plan (STP), which outlines the implementation and operations plans for the school, to ensure its seamless coordination.

## 1.2 Stakeholder engagement

Throughout the planning process for this activity, a Transport Working Group (TWG) has been established to facilitate collaboration across Port Stephens Council, Transport for NSW (TfNSW), DoE and the project team to ensure the successful planning and delivery of the development. TWG meetings were set-up and held at key project milestones to help inform the planning and delivery of the activity. The discussions and recommendations made throughout these meetings have been summarised below in Table 1.1.

Table 1.1 TWG meetings – transport and parking matters

| Item No. | Topic | Matters arising | Response / finding |
|---|---|---|---|
| 1.0 | Active transport access | Provision of a formalised zebra crossing on Ferodale Road | The existing zebra crossing on Ferodale Road (outside Medowie Public School) will support student access from the shared path on the northern side of Ferodale Road.<br>There are two existing pedestrian crossing facilities on Ferodale Road, within close proximity to the new High School site. We believe that the addition of the new high school does not warrant the upgrade of the refuge on its own. However, it is recommended that the Port Stephens Council further investigates this upgrade as part of their local area works and the planned development in the area. |
| 2.0 | Public transport network | Comment arising about the expansion of existing bus routes currently serving Irrawang High School for Medowie High School. | The timetabling and route of school buses is the responsibility of Transport for NSW. An assessment of the anticipated demand for buses by students at the proposed Medowie High School indicates that approximately 15 bus trips will be required to support public transport use to the school. The existing local bus provision will require augmentation in both the AM and PM peak to meet the increase in demand for bus services. |
| 3.0 | Bus bay | Anticipated operations of the school bus bay. | WSP has found that new school bus bay will function acceptably. Section 5.3 of this TAIA outlines the bus bay capacity and the STP outlines the operational arrangements for facilitating coaches. |
| 4.0 | Kiss and ride | Concern over detouring to access the kiss and ride, particularly for vehicles travelling from the Medowie town centre (Ferodale Road, to Fairlands Road, to Lisadell Road and to Abundance Road). | Both the TAIA and STP identify the recommended routes for travel to and from the kiss and ride, which will be reinforced to parents and students through the activities identified in the STP implementation plan. |
| 5.0 | Kiss and ride | Potential for congestion resulting from the kiss and ride. | The capacity of the kiss and ride bay has been calculated on the anticipated transport mode share. Congestion will be managed through the various operational and monitoring activities outlined in the STP. This includes:<br>1 Education of the maximum bay dwell time of 2 minutes where necessary<br>2 Staggering bell times with Medowie Public School to reduce congestion. |

| Item No. | Topic | Matters arising | Response / finding |
|---|---|---|---|
| 6.0 | Student parking | Management of off-site parking for students driving to and from the school. | Public and active travel to and from school will be encouraged through the baseline mode share targets, proposed infrastructure provision and various activities outlined in the STP implementation plan.<br>This assessment has considered the likely student parking demand (Section 4.2), which identifies an approximate demand of 10 to 15 spaces. School Infrastructure does not provide on-site parking space for students as a matter of policy across the state. An assessment of the surrounding streets indicates that this demand can be accommodated by the existing on-street parking capacity. |
| 7.0 | Intersection treatments | The intersection of Abundance and Ferodale Road has been identified to be upgraded to a roundabout by the Port Stephens Council in the future. | The findings from the traffic assessment indicated that an upgrade would not be required to support the anticipated school traffic generation and background traffic growth and therefore this intersection upgrade does not fall within the recommended scope of mitigation measures for this activity.<br>It is noted that the requirement to upgrade the intersection of Ferodale Road and Abundance Road was identified in a Port Stephens Council Strategy document which was published prior to the High School being proposed on this site. The upgrade was found by Port Stephens Council to be necessary due to future residential developments to the north of the site. |
| 8.0 | Traffic assessment | Query arising about the consideration of planned future developments in the growth rate assigned for the traffic assessment. | The traffic assessment undertaken considers future area growth based on known factors. The planned future developments have been considered in the assessment with the inclusion of background traffic increase as well as the direct increase due to school traffic. |
| 9.0 | Traffic assessment | Modelling of the single intersection of Ferodale Road and Abundance Road. | It was agreed by the TWG that the approach to modelling being SIDRA 9.1 and specifically involving the single intersection, would be satisfactory for assessing the impact of the activity. As such, this approach has been adopted in the TAIA. |

## 1.3 Report Objectives

The purpose of this report is to assess the potential traffic and transport impacts from the development of the proposed Medowie High School. This work has been informed by ongoing consultation with the TWG.

Specifically, this report has the following objectives:

- **Assess the existing conditions** for all modes of transport in the study area including general access vehicles, freight (including restricted access vehicles), public transport (rail services, bus services and point-to-point transport) and active transport (bicycles and pedestrians).
- **Outline the existing environment** (road function, classification, and operation) in the study area that is likely to be affected by the construction and operation of the project.

- Assesses the project's **impacts on the surrounding road network**.
- **Review the proposed design** for the school layout with regards to vehicle access and parking provision, to ensure that the proposed design is suitable for the anticipated demand and compliant with the relevant standards.
- **Provide an overview of the TWG discussion and recommendations that have informed the proposed design.**
- **Recommend mitigation measures** to manage identified traffic impacts of the project.

## 1.4 Structure of the Report

- **Section 1 Introduction:** Describes the context of Medowie High School within the broader region and outlines the objectives of this report.
- **Section 2 Existing transport network:** Examines the existing surrounding transport network, with a focus on connectivity to the proposed school site.
- **Section 3 Proposed activity:** Outlines the proposal, highlighting key details including student and staff numbers, parking provision and access arrangements.
- **Section 4 Impact Assessment:** Assesses the impact of the proposal on the local traffic environment, on-street parking, public transport and walking and cycling.
- **Section 5 Design considerations:** Assesses the proposed design under the relevant guidance and standards.
- **Section 6 Construction traffic management:** High level assessment of construction activities on the local traffic environment and on-street parking arrangements.
- **Section 7 Mitigation measures:** Identifies the various mitigation measures that will support the development.
- **Section 8 Conclusions:** Summarises the key findings from the assessment.

## 1.5 Guidelines and References

- Guide to Transport Impact Assessment (TS 00085 version 1.1 prepared by TfNSW)
- AS2890.1:2004 Off-street car parking
- AS2890.2:2018 Off-street commercial vehicle facilities
- AS2890.3:2015 Bicycle parking
- AS2890.6:2022 Off-street parking for people with disabilities
- Austroads Guide to Road Design
- Austroads Guide to Traffic Management
- Transport and Infrastructure State Environmental Planning Policy (SEPP), 2021
- Port Stephens Development Control Plan (DCP), 2014
- New Medowie High School Rapid Transport Assessment (prepared by WSP dated 25 June 2024)
- Medowie Planning Strategy, Port Stephens Council, 2016.

# 2 Existing transport network

## 2.1 The Site

The site has a street address of 6 Abundance Road, Medowie. It is 6.51ha in area, and comprises 1 allotment, legally described as Lot 3 in DP788451.

A large proportion of the site is currently unused and vacant. A cluster of buildings including a single storey dwelling, an outhouse/shed structure and temporary greenhouse are located within the south eastern corner. The site contains a largely vegetated area to the south west corner. The site is relatively flat with a gradual fall from west to east toward Abundance Road.

The site has a primary frontage to Abundance Road to the east and Ferodale Road to the north. Abundance Road and Ferodale Road are both classified Local Roads. Medowie Road, approximately 1km east of the site, is a classified Regional Road.

The area surrounding the site mostly consists of industrial, rural residential, educational, and agricultural lands. Adjacent to the north western boundary is a Shell petrol station and mechanic garage. Adjacent to the north eastern boundary is a medical health clinic. Across Abundance Road along the eastern boundary are a number of warehouse and light industrial developments. Directly north of the site across Ferodale Road are large lots used for agricultural purposes. Medowie Public School is located on Ferodale Road, to the north west of the site, opposite the Shell petrol station.


Figure 2.1. Local site context

## 2.2 Road Network

As discussed in Section 2.1, the key access roads to the Medowie High School site are Ferodale Road and Abundance Road (depicted in Figure 2.2). These roads intersect at the northeast corner of the proposed site, operating as a priority-controlled intersection, with the major movement on Ferodale Road and minor on Abundance Road. A detailed description of these roads is provided in Section 2.2.1 and Section 2.2.2. To the east of the proposed development, Medowie Road is a regional road running north-south and connecting the Pacific Highway to the north with Richardson Road, Newcastle Airport and Nelson Bay Road to the south.


Figure 2.2 Existing road network

### 2.2.1 Ferodale Road

Ferodale Road is a local road which is generally aligned in an east-west direction. Ferodale Road comprises a two-lane two-way carriageway with an approximately 5-meter-wide traffic lane in each direction. A posted speed limit of 60 km/h applies except during school hours where a reduced speed limit of 40km/h is in effect within the vicinity of the existing Medowie Public School.

Unrestricted kerbside parking is generally permitted along Ferodale Road except where otherwise signed by “No Stopping” signage. There are currently no access driveways onto the proposed site from Ferodale Road.

### 2.2.2 Abundance Road

Abundance Road is a local road, which typically runs in a north-south direction. It features a two-lane, two-way carriageway with approximately 3-meter-wide traffic lanes in each direction and a posted speed limit of 60 km/h.

Unrestricted parking is allowed along the eastern side of Abundance Road, except where "No Stopping" signs are posted (see Section 2.7 for more details on on-street parking). North of the proposed site there is an access driveway off

Abundance Road to the health clinic. There are currently two unsealed (gravel) driveways onto the site from Abundance Road, midway and at the southern end of the site area.

## 2.3 Active Transport

### *2.3.1 Walking Infrastructure*

Whilst the existing pedestrian network provides some connectivity across the local area, there are several missing links that reduce the level of accessibility, as depicted in Figure 2.3. A pedestrian footpath is currently provided on the northern side of Ferodale Road, approximately 2 metres in width, providing a connection from the proposed school site to the Medowie town centre to the east and residences along Fairlands Road to the west. The southern side of Ferodale Road currently comprises of grass verge, with several access driveways to properties. There are currently no footpath links provided on Abundance Road. The Medowie Planning Strategy (Port Stephens Council, 2016) provides a vision for the transport infrastructure for the Medowie township to 2036. Within the context of the Medowie High School site, this strategy proposes new shared use paths along both sides of Ferodale Road (see Figure 2.3). Although this proposed future infrastructure is not included in the current proposal, it is important to consider the new high school in the context of these future plans.

A marked school crossing is currently located on Ferodale Road, approximately 80 meters west of the Medowie High School site. Pedestrian refuges are also provided along Ferodale Road and within the vicinity of the Medowie Town Centre, east of the school site.


Figure 2.3 Existing and future walking infrastructure

### 2.3.2 *Cycling Infrastructure*

There is currently no dedicated cycling infrastructure within the vicinity of the proposed high school site. In NSW, children under 16 years old are permitted to ride on footpaths. While dedicated cycling infrastructure can enhance cycling connectivity, it is not strictly necessary for ensuring accessibility. The closest dedicated route is approximately 2.5 km south-east of the site, which connects southwest towards Raymond Terrace. As outlined in Section 2.3.1, a new shared path planned for construction by the Port Stephens Council (along the southern edge of Ferodale Road), will improve cycling connectivity directly to the school.

## 2.4 Public Transport

Existing bus services within the vicinity of the high school site have been reviewed and are summarised in Table 2.1. These services are supported by four bus stops within proximity to the proposed site entry points. The infrastructure at these stops is currently limited, with no bus seating, shelter or signage currently provided at any of the four local bus stops. In total, the existing 23 school buses and existing two public buses (136 and 137) serve the site.

The frequency of the school bus routes however is limited, typically operating at one service per day. The public bus services provide a higher level of frequency, typically operating every 40 – 60 minutes per day. These public bus services provide connectivity from the school site to Newcastle to the south, Raymond Terrace to the west and Lemon Tree

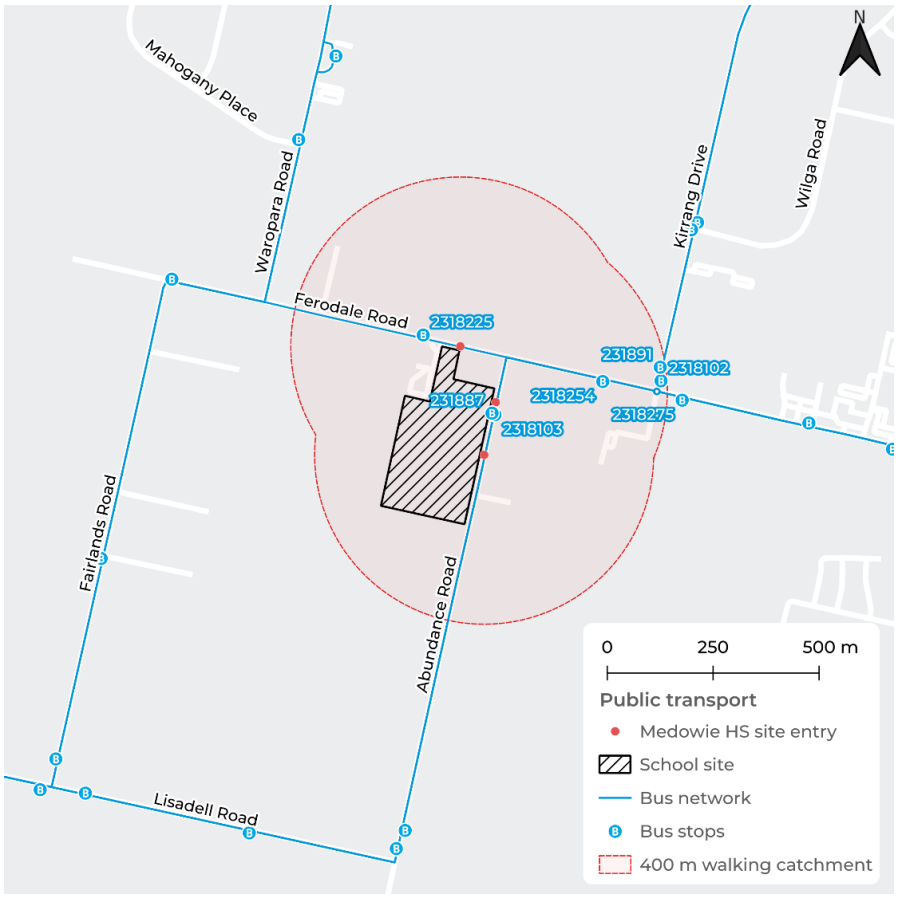
Passage to the east. 12 inbound public and school buses arrive between 7:16 AM and 9:00 AM and 14 outbound public and school buses depart between 2:57 PM and 4:34 PM. There is no rail infrastructure within the vicinity of the high school site, with the closest train and light rail stations interfacing at the Newcastle Interchange.

Table 2.1 Existing bus services stopping within 400 metres of the new school

| Route No. | Route | No. inbound | No. of outbound | Arrival/Departure time* | Further details on school bus service |
|---|---|---|---|---|---|
| 1391 | Medowie to Newcastle Grammar | 1 | 0 | 7:16 | Stops at 2 schools after Medowie HS |
| 1401 | Medowie to Newcastle HS | 1 | 0 | 7:16 | Stops at 3 schools after Medowie HS |
| 1311 | Medowie & Richardson to Newcastle Grammar | 1 | 0 | 7:22 | Stops at 5 schools after Medowie HS |
| 1281 | Medowie to Irrawang HS | 1 | 0 | 7:40 | Stops at 3 schools prior to and 1 school after Medowie HS |
| 1282 | Raymond Terrace to Medowie Primary School | 1 | 0 | 8:14 | Commences at Irrawang HS Stops at Medowie PS |
| 1381 | Williamtown to Hunter River High School | 1 | 0 | 8:15 | Stops at 1 school prior to and 6 schools after Medowie HS |
| 1180 | Wirreanda Public School to Medowie Primary School | 1 | 0 | 8:43 | Stops at 2 schools prior to Medowie HS |
| 1362 | Campvale to Wirreandra Primary School | 1 | 0 | 8:43 | Commences at Irrawang HS Stops at 1 before and after Medowie HS |
| 1241 | Lemon Tree Passage Shops to Medowie Christian School | 1 | 0 | 9:00 | Stops at 4 schools prior to Medowie HS |
| 1382 | Medowie Primary School to Medowie & Campvale | 0 | 1 | 14:57 | Stops at 2 schools before terminating |
| 1482 | Medowie Primary School to Medowie Christian School | 0 | 1 | 14:57 | Stops at 1 school before terminating |
| 1483 | Medowie Christian School to Lemon Tree Passage | 0 | 1 | 15:23 | Stops at 1 school prior to and 1 after Medowie HS |
| 1433 | Medowie Christian College to Medowie | 0 | 1 | 15:33 | Stops at 1 school prior to and 1 after Medowie HS |
| 1284 | Raymond Terrace PS to Lakeview & Medowie | 0 | 1 | 15:44 | Commences at Raymond Terrace PS Stops at 3 schools prior to Medowie HS |

| | | | | | |
|---|---|---|---|---|---|
| 1471 | Hunter Valley Grammar to Medowie | 0 | 1 | 16:03 | Stops at 3 schools before Medowie HS |
| 1367 | Irrawang HS to Medowie | 0 | 1 | 16:06 | Commences at Irrawang HS<br>Does not stop at other schools<br>before or after Medowie HS |
| 1672 | San Clemente to Medowie | 0 | 1 | 16:11 | Commences at San Clemente HS<br>Stops at 2 schools prior to Medowie HS |
| 2204 | Newcastle HS to Medowie | 0 | 1 | 16:34 | Stops at 2 schools before Medowie HS |
| 1463 | Irrawang HS to Medowie | 0 | 1 | 15:00 (W)<br>15:37 (MTuThF) | Commences at Irrawang HS<br>Does not stop at other schools before or after Medowie HS |
| 1623 | Irrawang HS to Medowie | 0 | 1 | 15:20 (W)<br>15:36 (MTuThF) | Commences at Irrawang HS<br>Stops at 1 school after Medowie HS |
| 136 | Stockton to Raymond Terrace via Medowie | 1 | 1 | 8:24, 15:09 | Stops at 1 school after Medowie HS |
| 136 | Raymond Terrace to Stockton via Medowie | 1 | 1 | 8:24, 15:28 | Stops at 1 school before Medowie HS |
| 137 | Lemon Tree Passage to Raymond Terrace via Medowie | 1 | 1 | 8:40, 15:24 | Stops at 4 schools prior to and 1 school after Medowie HS |

*Source: TfNSW Routes and Timetables*




*Source: GTFS, TfNSW*

Figure 2.4 Medowie high school public transport infrastructure and access

The existing bus network depicted in Figure 2.5, provides connectivity to the Medowie Town Centre, as well as Raymond Terrace, Mallabula / Lemon Tree Passage and Stockton just north of Newcastle.


*Source:* *GTFS, TfNSW*

Figure 2.5 Public transport network extents

## 2.5 Road Safety

A review of available crash history data indicates that during the 5 years between 2019 and 2023, approximately 15 crashes occurred within the vicinity of the site (depicted in Figure 2.6). The vast majority of crashes occurred between vehicles and resulted in an injury (67 per cent), three serious injuries, four moderate injuries and three minor injuries. The intersection of Ferodale Road and Medowie Road, near the Medowie town centre, has a cluster of crashes as depicted. Within the vicinity of the proposed school site, the intersection of Ferodale Road and Abundance Road has yielded a relatively lower number of collisions between 2019 and 2023 (two collisions). The safety impacts of the proposed new high school on this intersection have been explored further in Section 4.4. It is worth noting that none of the recorded collisions involved a pedestrian and only one involved a cyclist. This likely reflects the current low usage of active transport in the area, which is expected to increase with the new activity. This change has been addressed in the plan for the site's transport and access infrastructure.

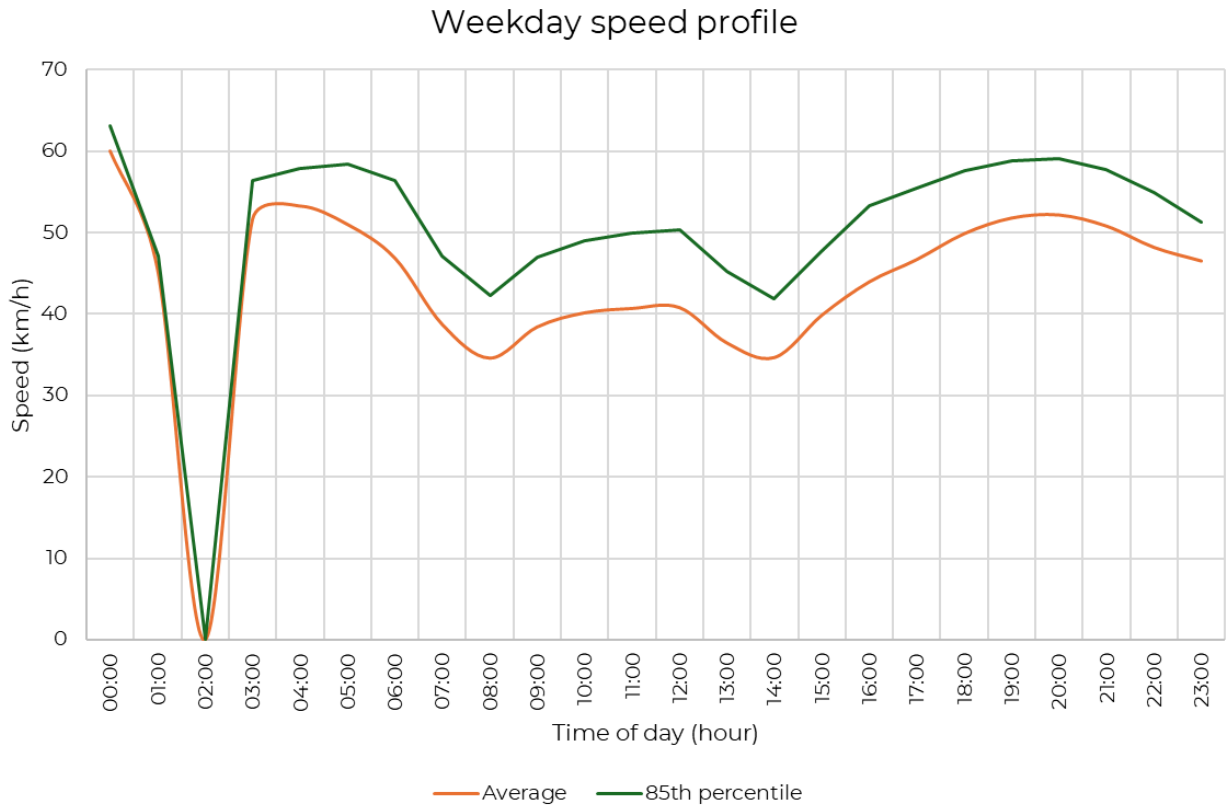
In late 2024 (not included within the available crash dataset) a fatality occurred on Abundance Road. It is understood that this occurred from a collision between a vehicle on the roadway and a motorcycle entering the roadway from an adjacent driveway. The available crash data included two collisions between light utility trucks entering Ferodale Road from adjacent driveways. This indicates that the existing traffic calming measures or that driveway sight distances may be inadequate to support vehicles safely entering the roadway.


*Source: NSW Crash data, 2019 – 2023*

Figure 2.6 Medowie road crash data analysis

Note the points have been dispersed at locations where collisions overlap.

A traffic survey was undertaken on Ferodale Road, Thursday the 22nd of August to Thursday the 29th of August 2024, during the school term. A key finding from this survey was that the 85$^{th}$ percentile speed on weekdays was above the school zone default speed limit (40 km/h) during the peak school periods. This indicates a potential existing issue of speeding along Ferodale Road.




*Source:* *Trans Traffic Survey, 22/08/24 – 29/08/24*

Figure 2.7 Ferodale Road weekday speed profile

## 2.6 Traffic Assessment

A traffic assessment has been undertaken to both understand existing traffic conditions and intersection performance and assess the likely impact of the proposed activity. The focus of this assessment is the intersection of Abundance Road and Ferodale Road, as it provides the key entry point to the high school site.

The need to assess additional neighbouring intersections, including Ferodale Road/Kirrang Drive, Ferodale Road/Waropara Road, and Abundance Road/Lisadell Road, was considered. However, due to the existing low traffic volumes, the distance of these intersections from the school, and the proximity of the main local attractors (Medowie Public School and the New High School for Medowie) to Ferodale Road/Abundance Road, it was determined that assessing the main access point to the school would be sufficient to understand the likely impacts on the local traffic environment. This approach has been endorsed by the TWG throughout the engagement process and adopted for the subsequent traffic assessment.

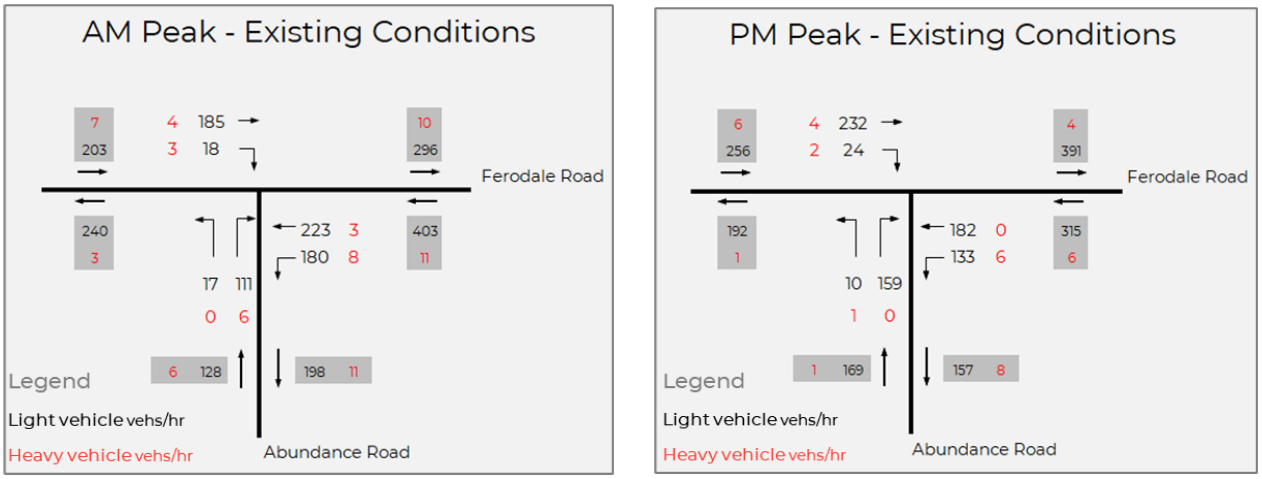
This intersection performance has been modelled under both existing conditions and the proposed activity scenario. This section outlines the assessment methodology adopted and the results from assessing the intersection under existing conditions.

### *2.6.1 Ferodale Road / Abundance Road intersection*

The Ferodale Road / Abundance Road intersection is unsignalised and comprises a single arrival lane and single departure lane from each approach. This intersection is priority-controlled, with Ferodale Road operating as the major road and Abundance Road as the minor road (controlled by a stop sign).

In order to establish baseline traffic conditions, turning movement counts were undertaken at this intersection for the week between Thursday the 22nd of August to Thursday the 29th of August 2024, during the school term. The existing AM and PM peak periods were observed to occur between 8:15 AM – 9:15 AM and 2:30 PM – 3:30 PM respectively.

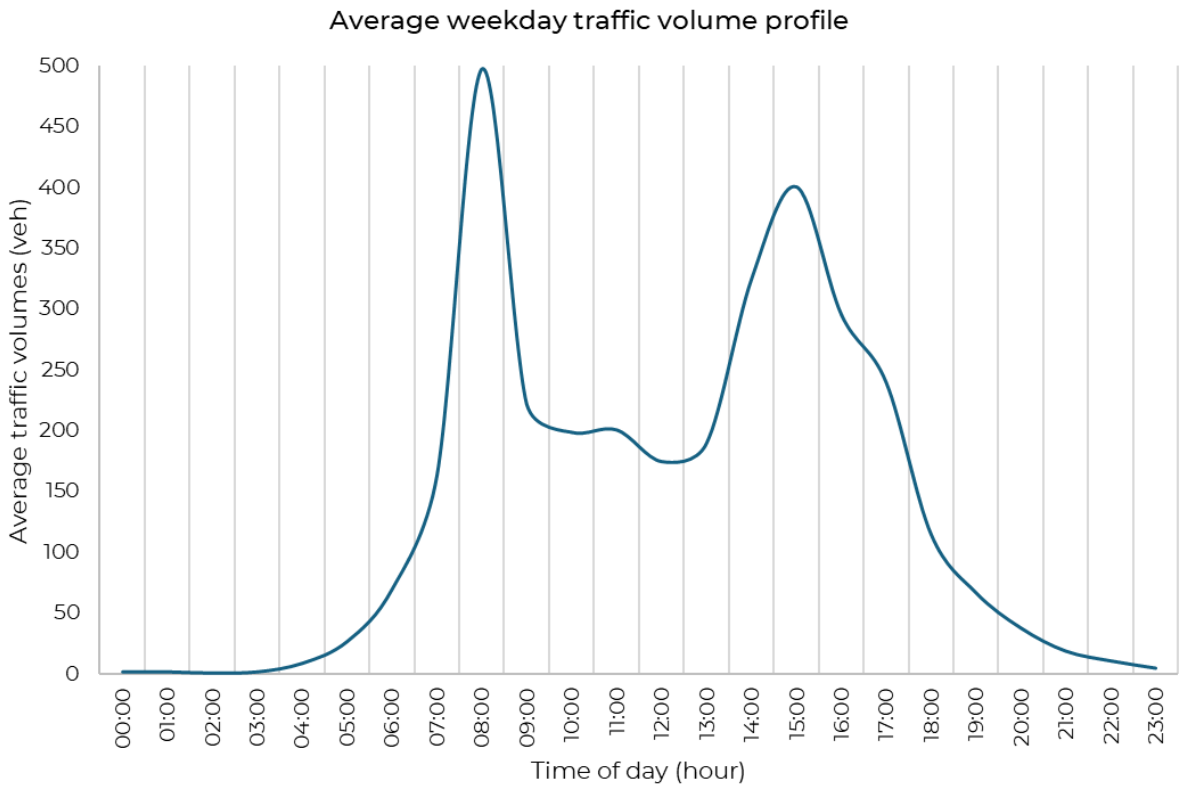
The existing intersection arrangement as well as the existing peak hour traffic volumes are indicatively illustrated in Figure 2.8.




*Source: Trans Traffic Survey (Thursday 22/08/24 – Thursday 29/08/24)*

Figure 2.8 Existing intersection volumes

The results from the traffic survey conducted between Thursday the 22nd of August to Thursday the 29th of August 2024, indicate increased average weekday traffic volumes on Ferodale Road near the Medowie Primary School, during the peak pick-up and drop-off periods. These peaks include 8:00 AM during the drop-off period and 3:00 PM during pick-up period (see Figure 2.9). It is likely that on-street parking correlates with these peaks, with parents utilising the on-street parking availability for pick-up and drop-off operations. Section 4.2 addresses the impacts of the proposed activity on the on-street parking conditions and outlines the mitigation measures to minimise the impact.




*Source: Trans Traffic Survey, 22/08/24 – 29/08/24*

Figure 2.9 Ferodale Road Average weekday traffic volume profile

### 2.6.2 *Assessment Methodology*

Intersection modelling to assess the impact of the proposed high school activity on the intersection of Ferodale Road and Abundance Road, was undertaken in SIDRA Intersection 9 (version 9.0.3.9771). SIDRA is an industry-recognised traffic engineering software and is suitable to assess the measurable intersection performance metrics relevant for the project including Level of Service (LOS), queue length and degree of saturation (volume/capacity). These key metrics are discussed below.

#### 2.6.2.1 Level of Service

Level of Service (LoS) is a basic performance measure used to describe the operation of an intersection. Levels of Service range from A (indicating good intersection operation) to F (indicating over-saturated conditions with long delays and queues). At signalised intersections, the LoS criteria are related to average intersection delay (seconds per vehicle). At priority-controlled (give-way and stop control) and roundabout intersections, the LoS is based on the modelled delay (seconds per vehicle) for the most delayed movement.

The TfNSW LoS criteria for intersections, which has been used throughout this assessment, is displayed in Table 2.2.

Table 2.2 Level of Service criteria for intersections

| Level of service | Average delay (seconds per vehicle) | Traffic signals, roundabout | Give-way and stop signs |
|---|---|---|---|
| A | Less than 14 | Good operation | Good operation |
| B | 15 to 28 | Good with acceptable delays and spare capacity. | Acceptable delays and spare capacity. |

| Level of service | Average delay (seconds per vehicle) | Traffic signals, roundabout | Give-way and stop signs |
|---|---|---|---|
| C | 29 to 42 | Satisfactory | Satisfactory, but accident study required. |
| D | 43 to 56 | Operating near capacity | Near capacity and accident study required. |
| E | 57 to 70 | At capacity. At signals, incidents would cause excessive delays.<br>Roundabouts require other control mode. | At capacity, requires other control mode. |
| F | Greater than 70 | Unsatisfactory with excessive queuing. | Unsatisfactory with excessive queuing; requires other control mode. |

*Source: Guide to Transport Impact Assessment (Transport for NSW, 2024)*

#### 2.6.2.2 Degree of Saturation

The Degree of Saturation (DoS) is the ratio of demand flow to capacity, and therefore has no unit. As it approaches 1.0, extensive queues and delays could be expected. For a satisfactory situation, DoS should be less than the nominated practical degree of saturation, usually 0.9. The intersection DoS is based on the movement with the highest value.

According to Austroads, in practice, the target degrees of saturation (known as practical degree of saturation) for signal, roundabout and priority-controlled intersections are 0.90, 0.85 and 0.80 respectively.

#### 2.6.2.3 Average Vehicle Delay

This is the difference between interrupted and uninterrupted travel times through the intersection and is measured in seconds per vehicle. At signalised intersections, the average intersection delay is usually reported. At roundabouts and priority-controlled intersections, the average delay for the most delayed movement is usually reported.

#### 2.6.2.4 Queue length

Queue length is measured in metres reflecting the number of vehicles waiting at the stop line and is usually quoted as the 95th percentile back of queue, which is the value below which 95 per cent of all observed queue lengths fall. It reflects the number of vehicles per traffic lane at the start of the green period, when traffic starts moving again after a red signal. The intersection queue length is usually taken from the movement with the longest queue length.

### *2.6.3 Existing Intersection Performance*

Assessment of the intersection of Ferodale Road and Abundance Road under existing conditions indicates 'good' performance, operating at LoS A. The maximum 95$^{th}$ percentile queue occurs on Abundance Road during the PM peak period (7.3 metres), equating to just over one car length of queuing.

Table 2.3 Existing intersection operating conditions

| Approach | AM Peak | | | | PM Peak | | | |
|---|---|---|---|---|---|---|---|---|
| | DoS | Ave Delay (sec) | LoS | 95% Queue (m) | DoS | Ave Delay (sec) | LoS | 95% Queue (m) |
| Abundance Road (S) | 0.22 | 11.8 | A | 5.7 | 0.27 | 11.5 | A | 7.3 |
| Ferodale Road (E) | 0.22 | 2.6 | A | 0 | 0.17 | 2.5 | A | 0 |

| Approach | AM Peak | | | | PM Peak | | | |
|---|---|---|---|---|---|---|---|---|
| | DoS | Ave Delay (sec) | LoS | 95% Queue (m) | DoS | Ave Delay (sec) | LoS | 95% Queue (m) |
| Ferodale Road (W) | 0.12 | 1.1 | A | 1.8 | 0.14 | 0.9 | A | 1.8 |

## 2.7 Parking availability

On-street parking is provided within the vicinity of the site on both Ferodale Road and Abundance Road (see Figure 2.10). As depicted, on-street parking is facilitated along both sides of Ferodale Road and on the eastern side of Abundance Road, with no restrictions currently in-place. In total approximately 385 unrestricted and 42 restricted parking spaces are provided along the sections of Abundance Road and Ferodale Road depicted. Specifically, approximately 40 to 45 unrestricted parking spaces are provided along the school frontage on Abundance Road.


Figure 2.10 On-street parking availability within the new school site vicinity

# 3 Proposed activity

## 3.1 Overview

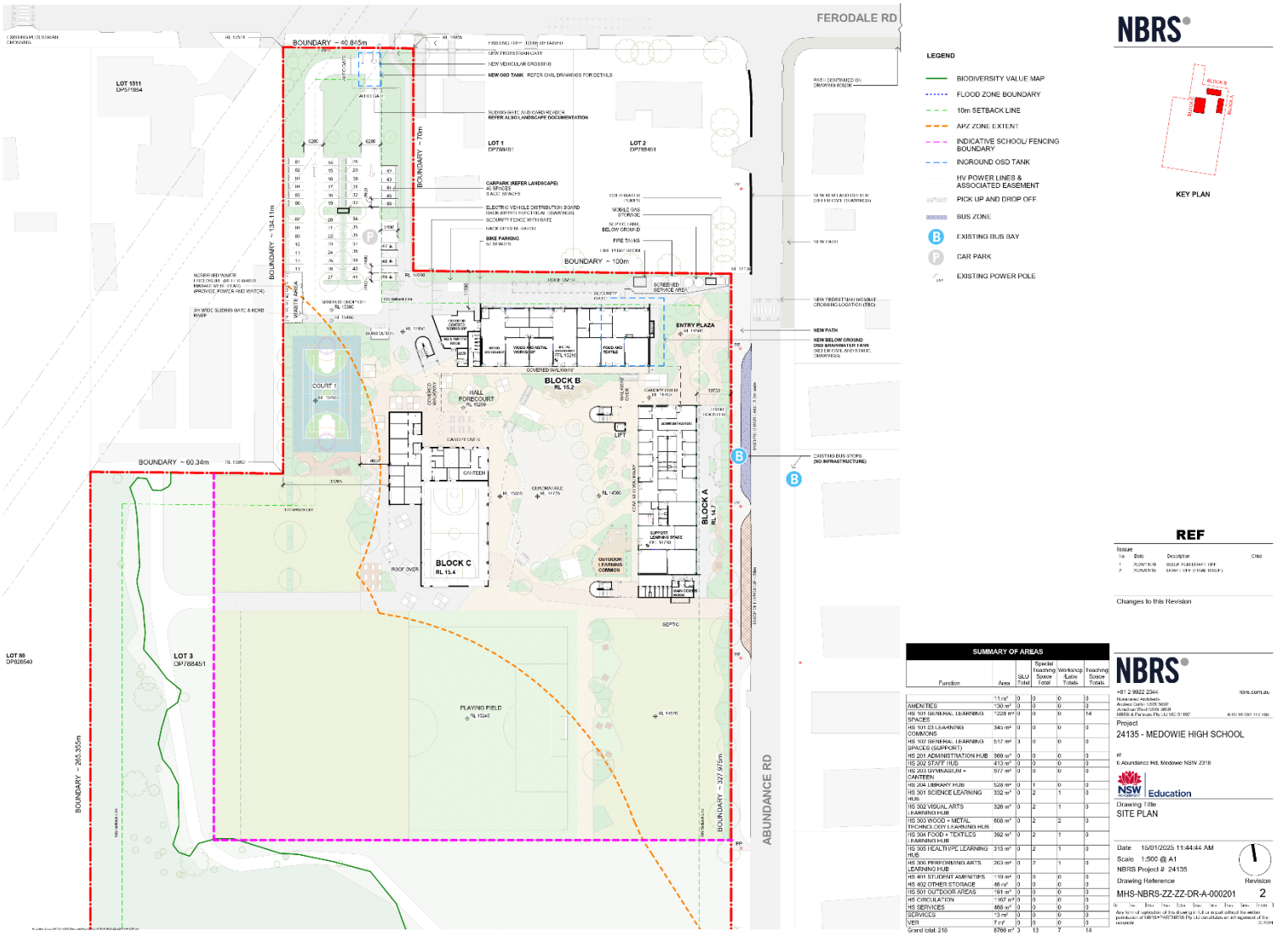
The proposed activity involves the construction of school facilities on the site for the purpose of the New High School for Medowie. The site contains a densely vegetated area to the southwest corner which is identified as land with high biodiversity values corresponding to the areas of remnant native vegetation (PCT 3995 – Hunter Coast Paperbark-Swamp Mahogany Forest). The existing dwelling house and other structures on the site will be demolished as part of the works. No other works are proposed within this area.

The proposed new school will accommodate 640 students in 29 permanent teaching spaces including 3 support teaching spaces across 3-storeys of buildings on the site. The proposed activity be delivered across 1 stage, and will consist of the following:

**29 permanent teaching spaces including 3 support teaching spaces, to accommodate 640 students, and school hall. Approximately 10,500 sqm of GFA is proposed.**

- Main vehicular ingress and egress to Ferodale Road to the north, with a new pedestrian and vehicle crossing proposed.
- Main pedestrian access to Abundance Road.
- Kiss and ride, and bus drop and pick up areas to Abundance Road (5 x parallel spaces).
- New pedestrian wombat crossing to Abundance Road
- 46 x car parking spaces and 3 x accessible car parking spaces.
- 57 x bicycle parking spaces.
- Block A (Admin) consisting of administration and learning spaces.
- Block B (Foodtech/Workshop) consisting of food technology rooms and workshops.
- Block C (Hall) consisting of school hall to accommodate 1,000 students.
- Central quad, 1 playing field, and 1 sports courtyard.

The proposed school development will include the following spaces; general learning spaces, General support learning spaces, administrative services, staff areas, gym and canteen, library areas for science, wood and metal, food and textiles, health PE, performing arts, additional learning spaces, student amenities, storage, movement (stairs and covered walkways).




*Source: NBRS, 2024*

Figure 3.1 New Medowie High School proposed activity

## 3.2 Baseline mode share

School Infrastructure have developed three mode share scenarios ('Baseline', 'Medium' and 'Reach') to target higher mode shares for sustainable travel to and from the school (these are outlined in the School Travel Plan Appendix D). However, this proposal is focussed on the 'Baseline Scenario' mode share target, as the conservative and more likely scenario at the site's opening. The baseline mode share targets for the new Medowie High School are summarised in Table 3.1. These targets have been informed by travel surveys undertaken by the Department of Education for the adjacent existing schools of Hunter River and Irrawang, which share similar demographics and travel behaviours, as no travel surveys were available for the new site.

Table 3.1 Baseline mode share targets

| Mode | Percentage | No. of students |
|---|---|---|
| Walk | 5% | 32 |
| Bicycle | 2% | 13 |
| Public transport | 70% | 449 |
| Private vehicle | 23% | 147 |
| **Total** | **100%** | **640** |

*Source: Based on DoE surveys*

## 3.3 Access Arrangements

### *3.3.1 Pedestrian and cyclist access*

Pedestrian and cyclist access / egress points to the school are proposed to be located at two separate locations, on the northern frontage (Ferodale Road) and on the eastern frontage (Abundance Road) (see Figure 3.2). At the Ferodale Road access point, pedestrians and cyclists are proposed to be separated from vehicles via a separate internal path, to facilitate safe access within the site. Staff usually arrive and leave the school outside of the peak AM and PM travel times. As a result, interactions between students walking from the west of the site to the Ferodale Road access and cars entering or exiting the driveway are expected to be minimal.

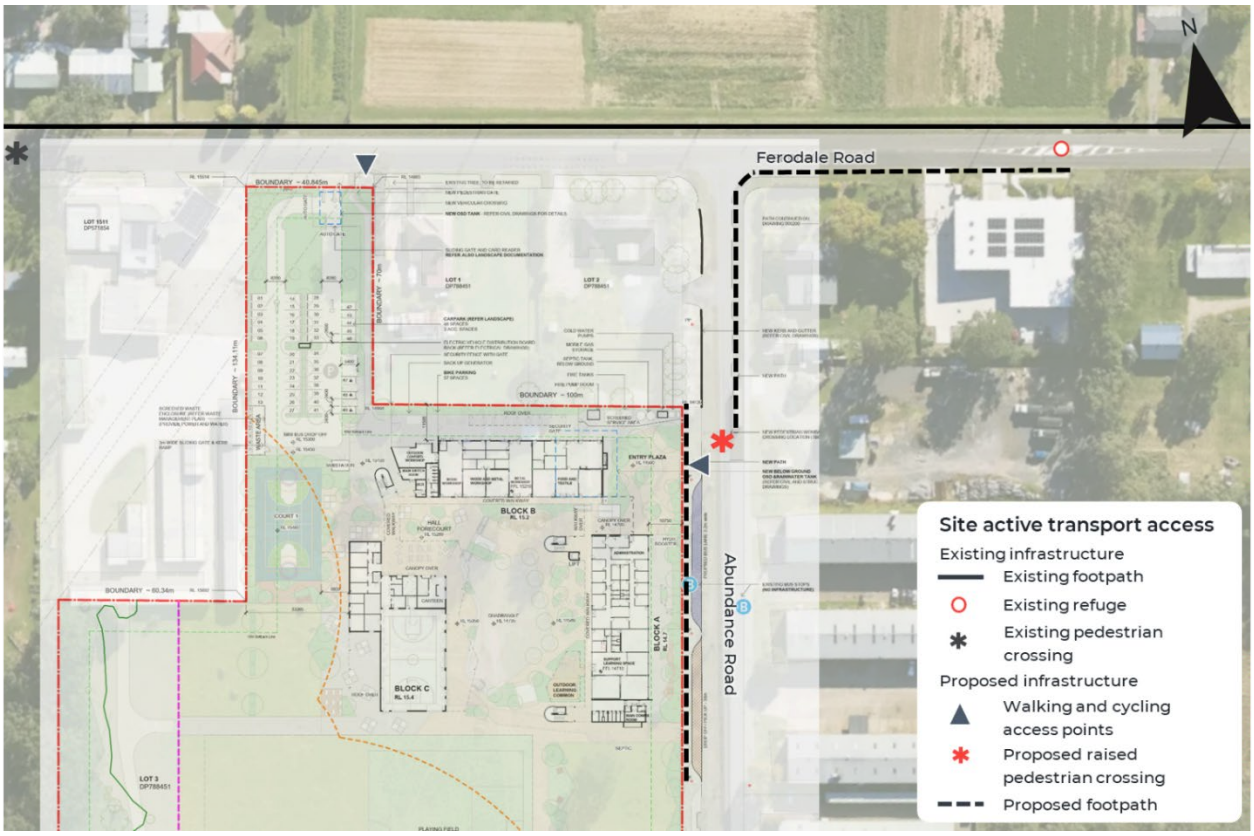
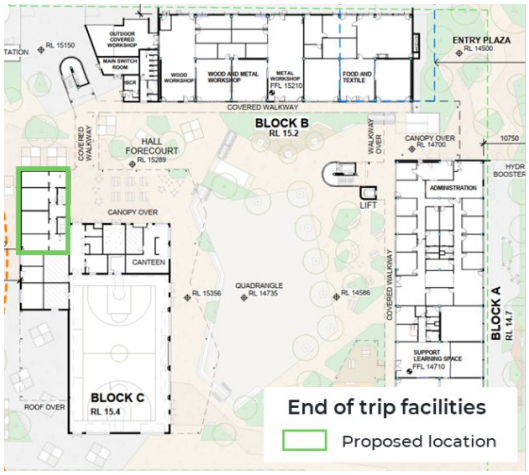



Figure 3.2 Proposed new high school site active transport access arrangements

New infrastructure is proposed to support pedestrian access to the school site, including a raised pedestrian crossing on Abundance Road, directly adjacent to the pedestrian access location. A new shared path will be provided along the school site frontage on Abundance Road (as displayed in Figure 3.2), supporting access between the school site and the existing pedestrian refuge on Ferodale Road. This shared path will be provided as Type 3 (as per the Walking Space Guide, 2020), providing a 3-metre width and allowing for 70 – 400 pedestrians per hour.

End of Trip (EoT) facilities will be provided on site to support staff active travel to and from the site. These will be provided within Block C and will include a total of four lockers and two showers to be equally split between male and female staff members.



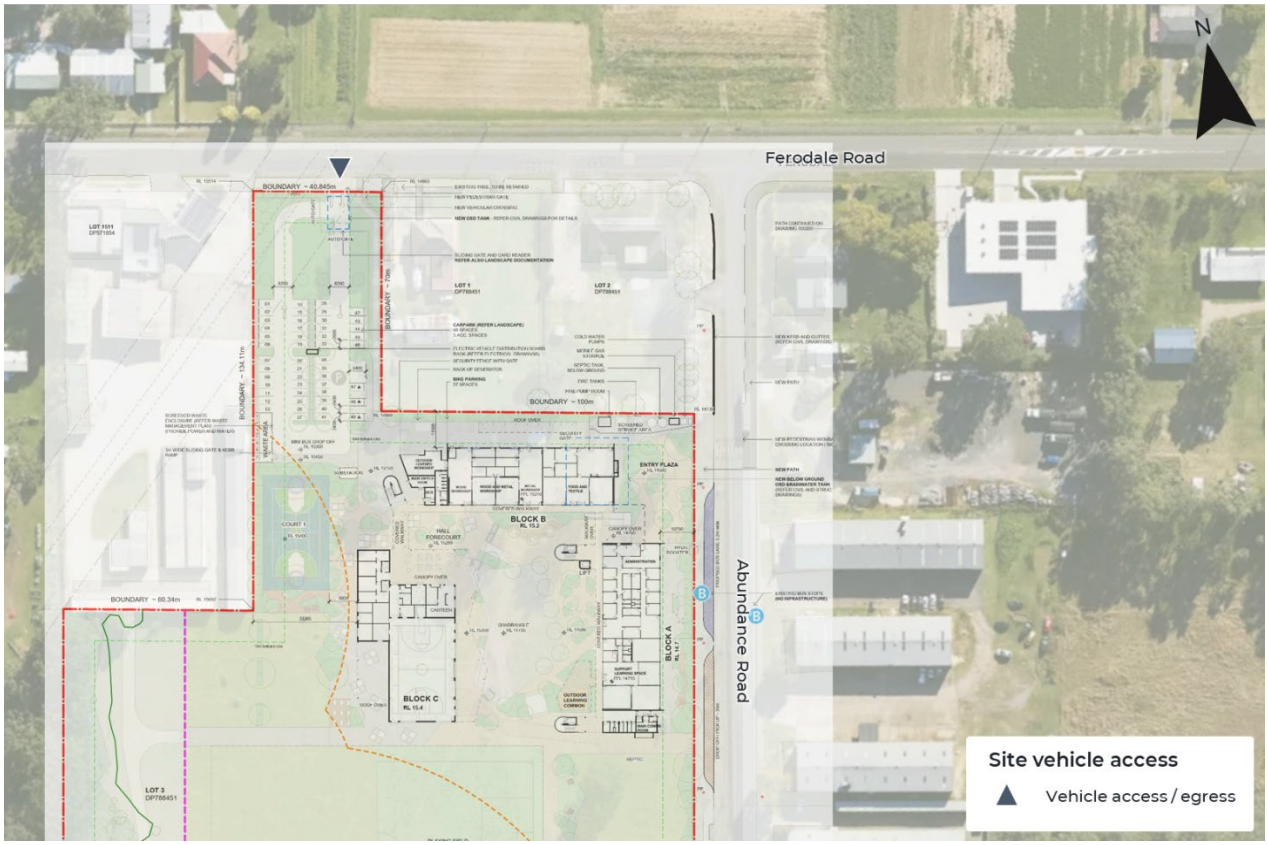

*Source: NBRS, 2024*

Figure 3.3 Proposed EoT facilities

### 3.3.2 *Vehicular access*

Staff vehicles, mini-buses, pick-up and drop-off for students in support learning classes and waste collection vehicles will be able to access the site from Ferodale Road (north). This access driveway is proposed to facilitate bi-directional travel to / from the on-site staff car park, as well as minibus drop off and waste collection area. Servicing, loading and emergency vehicles can access the site from Abundance Road, traversing over the kiss and ride bays to access the site.

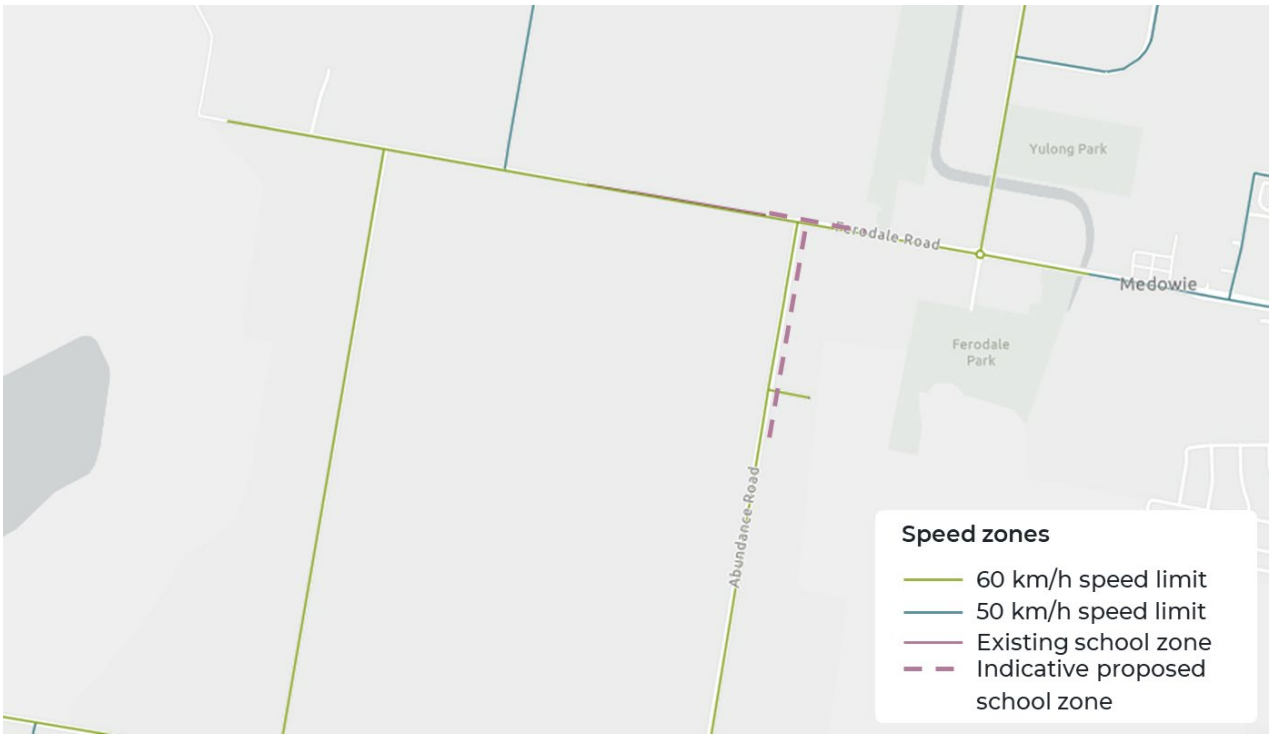
It is proposed that the intersection of Ferodale Road and Abundance Road will operate as a stop-controlled intersection, as per the existing conditions. The reasoning for this design decision is provided in the Traffic Impact Assessment Section 4.




*Source: NBRS, 2024*

Figure 3.4 Proposed vehicle access arrangements

School zones are proposed to be extended along Ferodale Road and Abundance Road as part of this activity (see Figure 3.5). This is proposed to extend just east of the existing refuge on Ferodale Road, improving safety for students crossing the road at this location. It is important that the local community is notified of the changes to the speed restrictions well before the school opens, to help enforce a lower speed environment from day one.




*Source: Transport Open Data (NSW Government, 2024)*

Figure 3.5 Indicative school zone for the activity

## 3.4 Parking Arrangements

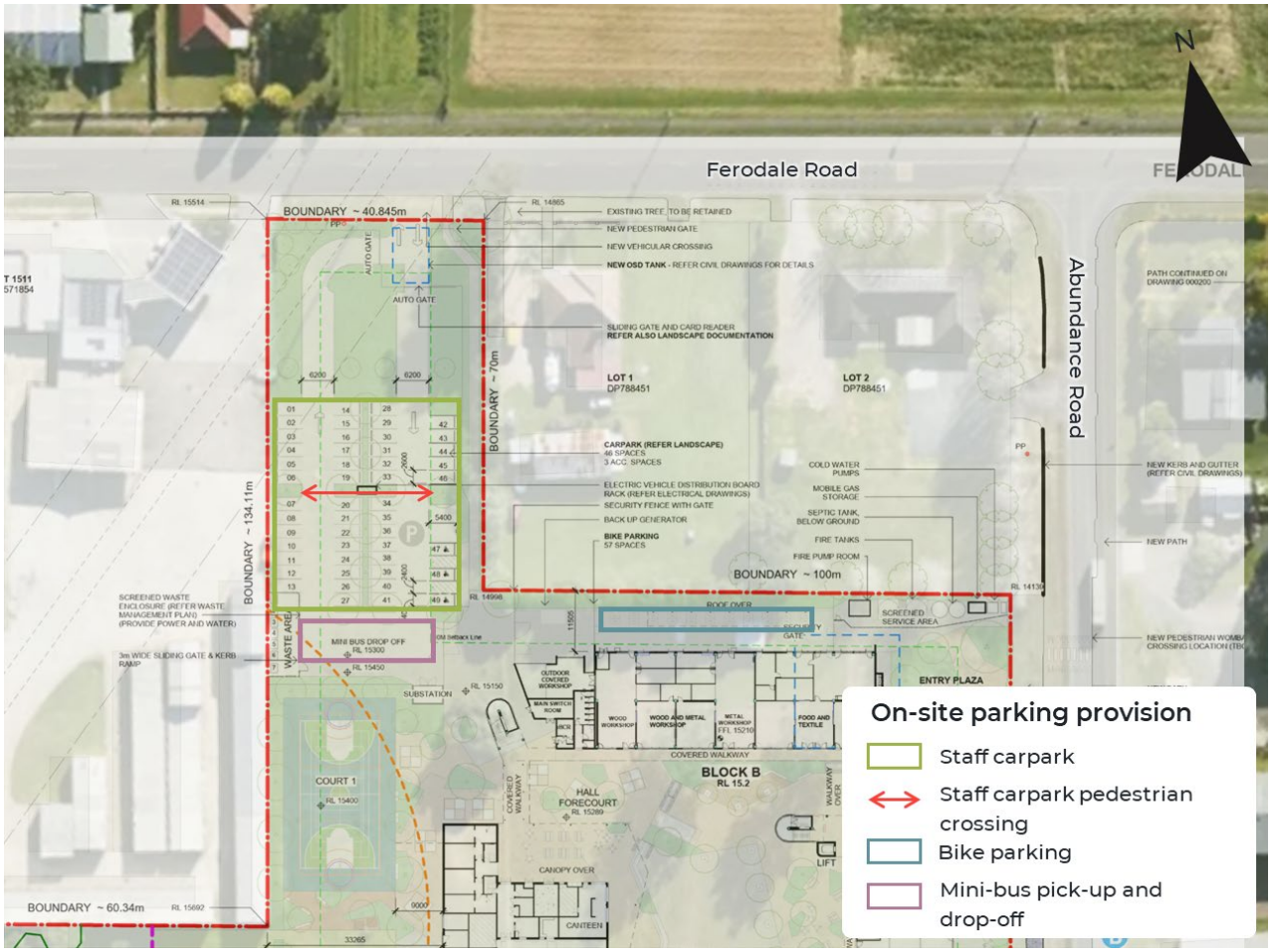
### *3.4.1 Parking provision*

The on-site carpark is proposed to be accessed via Ferodale Road at the northern frontage of the site. A total of 49 staff parking spaces are proposed for this carpark, three of which will be DDA accessible. This provision allows for every staff member to access an on-site parking space as well as staff with accessibility needs as per Port Stephens Development Control Plan (DCP) 2023. This carpark will support staff parking only. Visitor's travelling to and from the site will need to use on-street parking facilities. No parking provision is made to the students, who will be encouraged to use alternative transport modes to align with DoE policy. The decision reflects DoE's intention to encourage students to walk, cycle and take public transport to school, which would be undermined by providing student parking facilities (outlined in Appendix D School Travel Plan). In addition, a high level assessment of the potential student driving demand (see Section 4.2) indicates that the demand for student parking will likely be minimal.

Marked zebra pedestrian crossings are proposed to be provided at the middle of the carpark, to support safe access through and to the school. 57 bicycle parking spaces will be provided on-site just east of the carpark as depicted in Figure 3.6. These parking spaces will be shared between staff and students. The Port Stephens Council DCP specifies 1 bicycle space for every 10 students and staff members, which equates to a provision of 69 bicycle parking spaces for the new school site. However, considering the baseline mode share target for cycling to school of 2 per cent (13 students), the proposed bicycle parking spaces accounts for the anticipated cycling numbers to school (see Appendix D School travel plan for mode share targets). It is recommended that the split between staff and student bicycle parking spaces reflects the DCP minimum requirement of 1 bike space per 10 employees and 1 bike space per 10 students. This equates to a split of approximately 7 per cent of spaces for staff members (4 spaces) and 93 per cent of spaces for students (53 spaces). However, these estimated splits would not preclude staff members from utilising more bicycle parking spaces available.

WSP has been informed that demand for mini-bus parking is required within the new high school. A total of two mini-bus bays are provided along the southern aisle of the northern car park allowing for close access to the school building

facilities. The mini-buses will be hired exclusively for pick-up and drop-off activities, ensuring they are not stored on-site. This arrangement removes the risk of mini-buses blocking the waste vehicles outside of school hours.




*Source: NBRS, 2024*

Figure 3.6 Proposed on-site parking arrangements

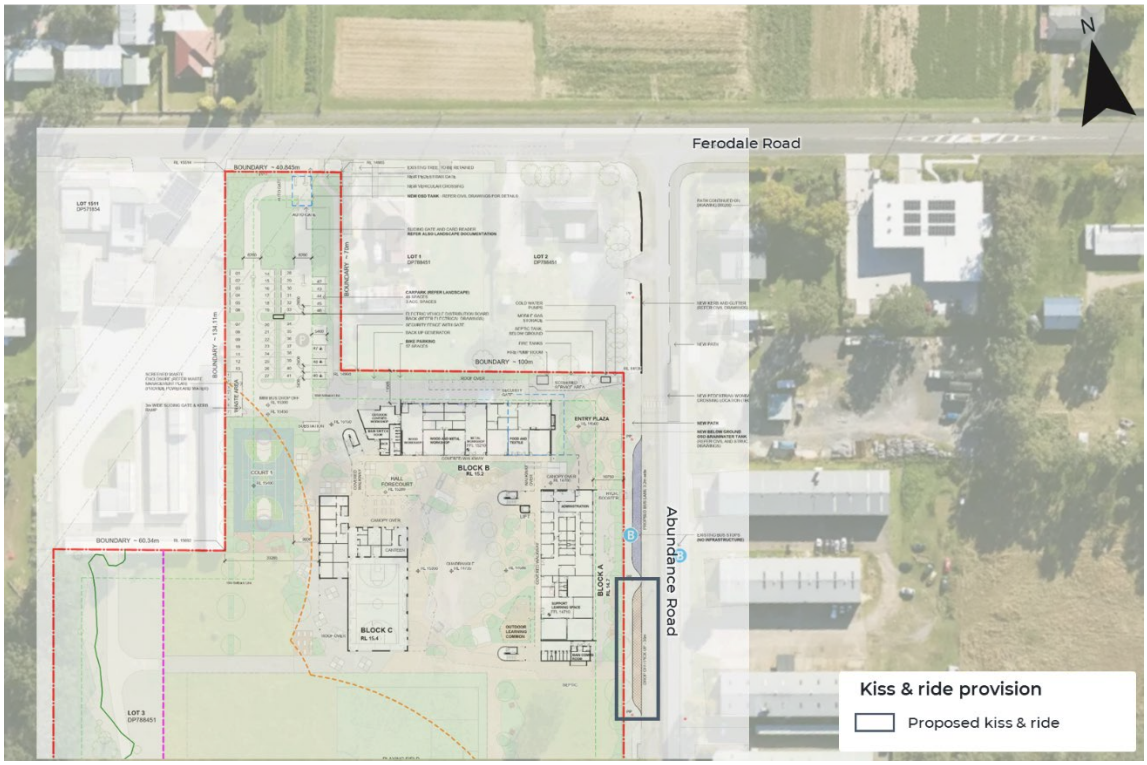
### 3.4.2 Kiss and ride

As discussed, the kiss & ride zone will be provided on the western side of Abundance Road just south of the bus bay (see Figure 3.7). This indented zone is currently proposed to be 36 metres in length utilising the available space between the existing power poles, allowing for up to standard five car spaces as per AS 2890.5:2020.

The required kiss & ride provision has been determined by considering the adopted baseline mode share target of 23 per cent (147 students), as well as the following key assumptions:

- Average vehicle occupancy of 1.5 students per vehicle
- Typical dwell time of one and a half minutes per car. Note that kiss and ride signage typically allows for a maximum of two minutes, however it has been assumed that high school kiss and ride operations will occur more quickly than a primary school.
- Pick-up and drop-off activities occurring over a 30-minute duration.

These considerations yield a kiss & ride bay requirement of five spaces, consistent with the proposed provision for the site. The STP outlines the recommended operations for the kiss and ride bay at this site.




*Source: NBRS, 2024*

Figure 3.7 Proposed kiss & ride arrangements

Figure 3.8 outlines the proposed access arrangements for the kiss and ride bay. As depicted, vehicles will travel around the block (Ferodale Road, Fairlands Road, Lisadell Road and Abundance Road) to access the kiss and ride if they are approaching from the north and east of the site. Parents and carers will be notified of this proposed route as part of the documentation recommended in the School Travel Plan (see Appendix D).


Figure 3.8 Proposed kiss & ride access arrangements

### 3.4.3 Bus bays

The school bus bay will be provided directly south of the proposed pedestrian crossing on Abundance Road, near the location of the existing bus stop. This bay will allow for up to 15 buses to access the bus bay per hour (State Transit Bus Infrastructure Guide, 2011).

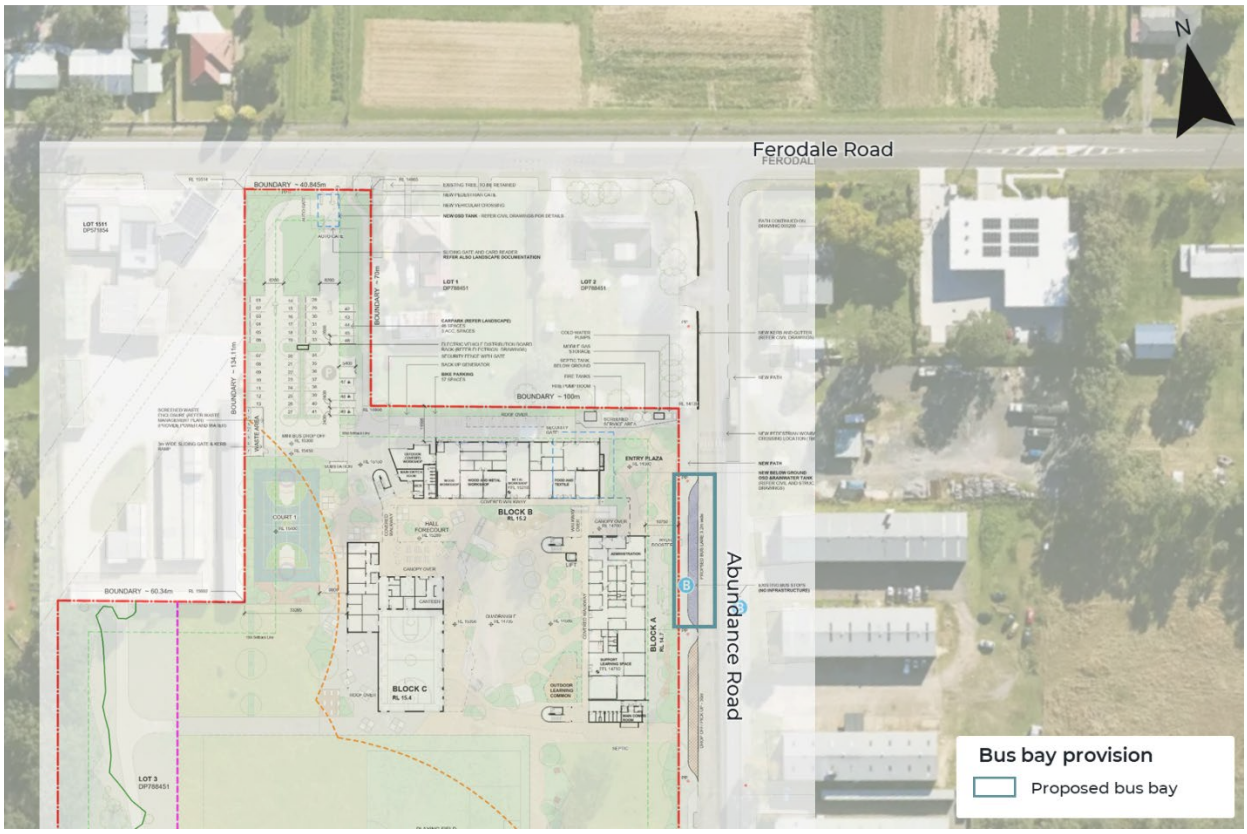
The approximate demand for bus pick-up and drop-offs has been determined considering the following assumptions:

- Baseline public transport mode share target of 70 per cent (equivalent to 448 students)
- Average bus capacity of 60 passengers, as estimated from the TfNSW Bus Panel Specification No. 3
- Average bus occupancy of 50 per cent, which has been endorsed by the DoE on previous studies

The results indicate that approximately 15 bus services would be needed to support student demand for travel to and from school. This represents a slightly higher demand compared with the existing bus service provision within the walking distance to the school site (as shown in Figure 2.4).

However, the proposed bus bay provision allowing up to 15 buses per hour supports the approximate demand that will be experienced. TfNSW is the authority responsible for bus planning who may consider increasing the bus frequency or additional bus routes to be accommodated at the proposed bus bay. It is important that this is monitored once the new high school is operational, to ensure that both student demand is met and that there is no queuing at the proposed bus bay.

Coach parking for excursions and special events needs to be accommodated along Abundance Road. However, the proposed bus bay will support public buses as well as school buses, specifically the 136 which has a 15-to-30-minute frequency during peak periods and an off-peak frequency of 40 minutes. As such, coach parking will need to be coordinated with public bus operations to ensure that it does not interfere with regular services.

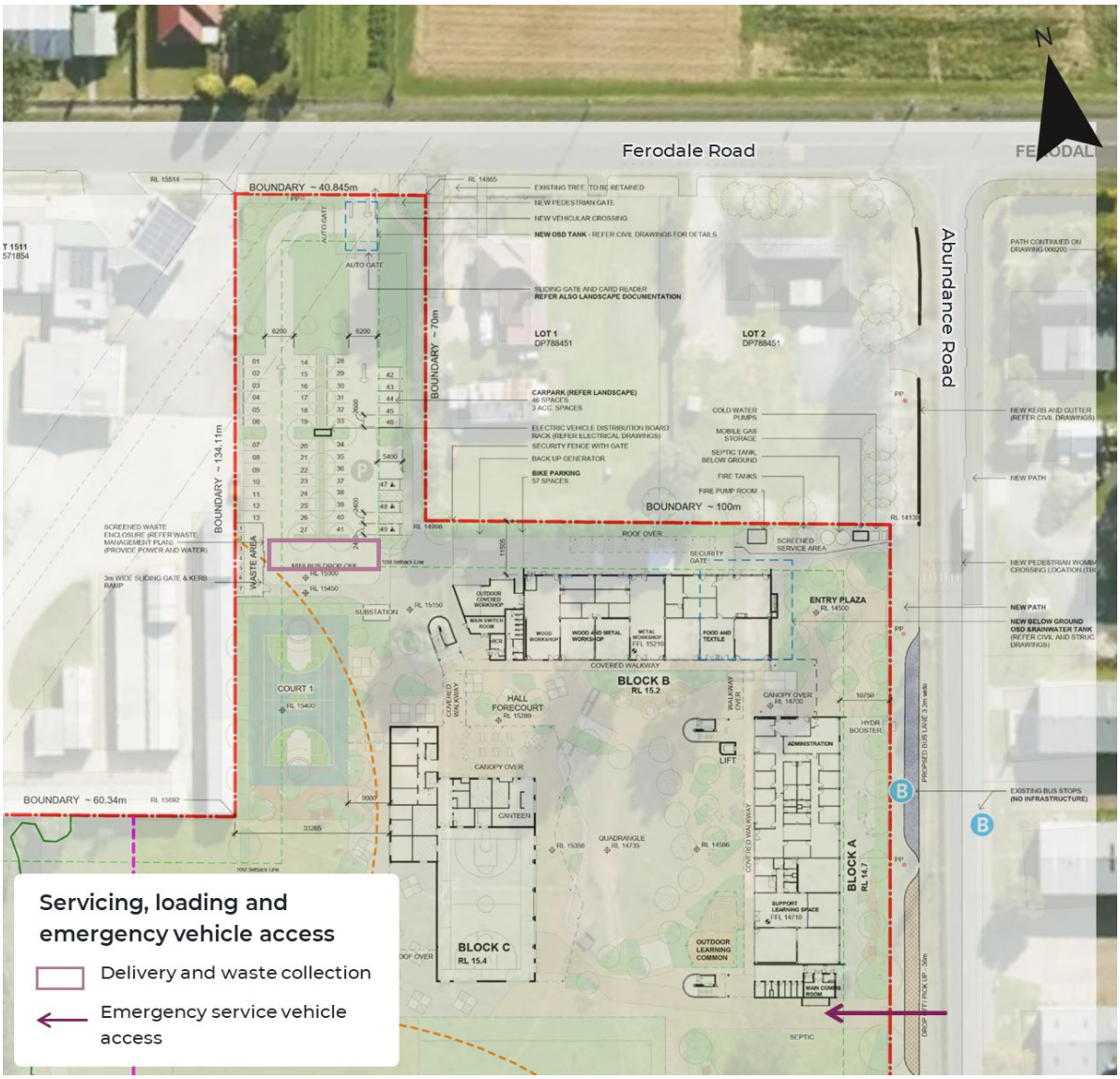



*Source: NBRS, 2024*

Figure 3.9 Proposed bus bay provision

### 3.4.4 Servicing, loading & emergency vehicles

Servicing, loading and waste vehicles will access the school site from Ferodale Road and will use the southern aisle of the carpark for loading, unloading and waste collection activities. These vehicles will access the site out of school operating hours to minimise the risk of interactions with vehicle movements in the carpark including mini-bus access. It is anticipated that a typical number of 10 deliveries per week will be accommodated at the site. Emergency vehicle access will be facilitated via Abundance Road, crossing over the proposed kiss-and-ride bay. Given the irregularity of emergency vehicles requiring access to the site, it is confirmed that this arrangement will be suitable and will not interfere with kiss & ride activities.




*Source: NBRS, 2024*

Figure 3.10 Servicing, loading and emergency vehicle access

# 4 Impact Assessment

The following section provides an assessment of the intersection of Ferodale Road and Abundance Road, with the addition of the new school site.

## 4.1 Road network impacts

### *4.1.1 Traffic Generation*

Anticipated traffic generation for the new high school was determined using the trip rates published in the TfNSW Guide to Transport Impact Assessment TS 00085 (2024). In this guide (Table 5.26) vehicle trip rates (per student) were identified for regional secondary schools, for both the AM and PM peaks (see Table 4.1). Considering the proposed student capacity (640 students), the vehicle trips to the site were determined to be 256 during the AM peak and 192 during the PM peak (see Table 4.1). All trips are expected to occur within an hour before and after school. Trips for before school and after school activities are expected to be smaller than the number of peak period trips.

Table 4.1 Medowie High School – forecast traffic generation

| | Peak | Vehicle trips (veh trip / student) | Student capacity | Vehicle trips (veh trip / student) |
|---|---|---|---|---|
| Vehicle trips | AM | 0.4 | 640 students | 256 |
| | PM | 0.3 | | 192 |

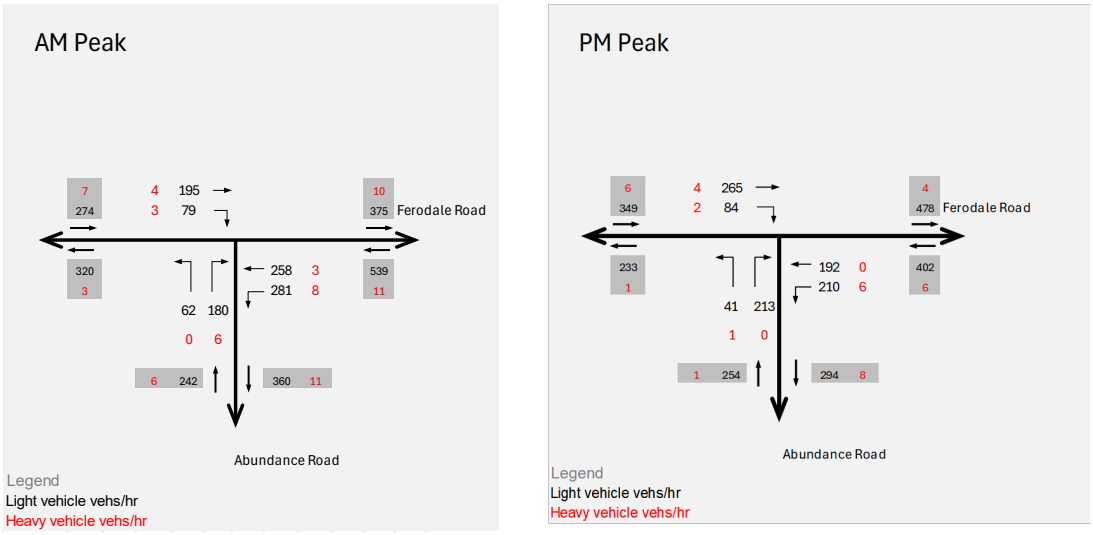
### *4.1.2 Traffic Distribution*

The traffic volumes anticipated to be generated by the site, as described in Section Figure 4.1, have been distributed into the surrounding network. Several key assumptions were made during the trip distribution process.

- In / out splits based on the TfNSW Trip Generation Surveys School Analysis Report, from which in the AM peak 59% enter the kiss-and-ride and 41% exit and in the PM peak 39% enter the kiss-and-ride and 61% exit
- Directional split assumed to be 30% school traffic travelling from the north, 10% travelling from the southwest and 60% travelling from the east. These proportions have been assumed based off the approximate catchment size
- Background traffic growth rate for the future years was estimated using the ABS Census data between 2016 and 2021, which determined an average population growth rate of 2.75%. This growth rate was applied to the existing traffic volume generation to determine the future base traffic volumes by 2026 and 2036 (not including the proposed activity).

From this traffic distribution, the following turning movements have been derived for the intersection of Abundance Road / Ferodale Road, as illustrated in Figure 4.1.

With new school 2026




With new school 2036

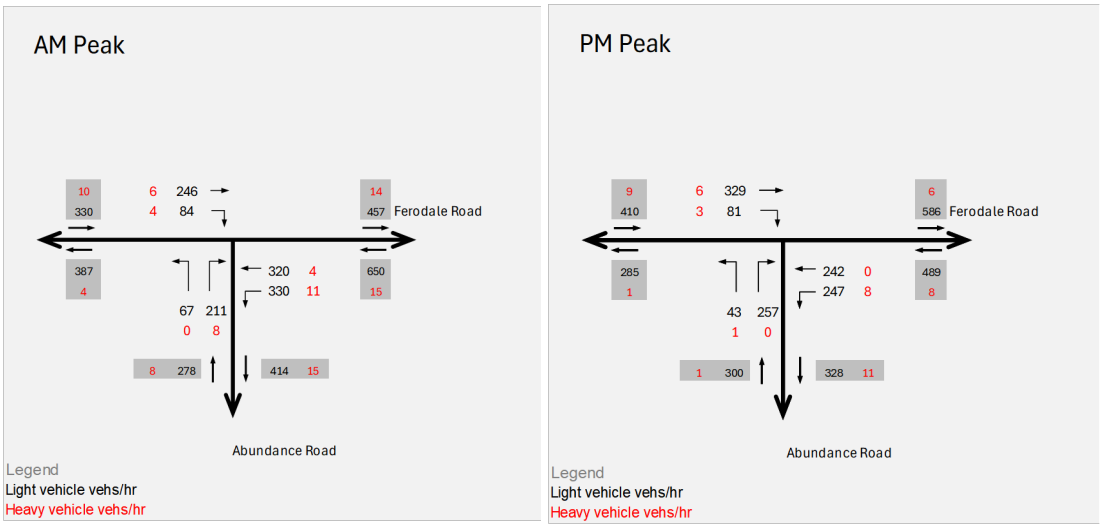



Figure 4.1 Anticipated post-activity turning volumes

### 4.1.3 *Future Intersection Performance*

Results from the SIDRA modelling indicates satisfactory performance at the intersection of Ferodale Road and Abundance Road, in both scenarios in 2026 and 2036 (see Table 4.2). In 2026 (with new school), all approaches will perform satisfactorily at LoS A, with the maximum 95 percentile queue at 12.1 metres (approximately two cars length). By 2036 (with new school), all approaches will perform satisfactorily with Abundance Road south approach achieving LoS B. The maximum 95$^{th}$ percentile queue will increase to 23.7 metres in the AM peak and 24.2 metres in the PM peak, approximately four to five cars length. This maximum queue length remains acceptable (see Table 2.2) for supporting efficient movement through the intersection and therefore indicates that no upgrade will be needed at the intersection of Abundance Road and Ferodale Road based on the trip generation of the proposed high school.

Table 4.2 SIDRA Intersection results – Post Dev 2026 and 2036

| Stage | Approach | AM Peak | | | | PM Peak | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | DoS | Ave Delay (sec) | LoS | 95% Queue (m) | DoS | Ave Delay (sec) | LoS | 95% Queue (m) |
| | Abundance Road (S) | 0.37 | 13.8 | A | 12.1 | 0.37 | 13.1 | A | 12.1 |

| Stage | Approach | AM Peak | | | | PM Peak | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | DoS | Ave Delay (sec) | LoS | 95% Queue (m) | DoS | Ave Delay (sec) | LoS | 95% Queue (m) |
| With new school 2026 | Ferodale Road (E) | 0.27 | 2.8 | A | 0.0 | 0.19 | 2.8 | A | 0.0 |
| | Ferodale Road (W) | 0.16 | 2.7 | A | 4.6 | 0.18 | 1.6 | A | 3.6 |
| | **Summary** | 0.37 | - | - | 12.10 | 0.37 | - | - | 12.10 |
| With new school 2036 | Abundance Road (S) | 0.59 | 19.6 | B | 23.7 | 0.59 | 18.3 | B | 24.2 |
| | Ferodale Road (E) | 0.34 | 2.8 | A | 0.0 | 0.25 | 2.7 | A | 0.0 |
| | Ferodale Road (W) | 0.22 | 3.2 | A | 6.7 | 0.24 | 1.8 | A | 5.1 |
| | **Summary** | 0.59 | - | - | 23.70 | 0.59 | - | - | 24.20 |

The Medowie Planning Strategy (Port Stephens Council, 2016), which was in-place prior to this activity, has identified the council's intention to upgrade this intersection to a roundabout, to support future residential growth in the locality. . Whilst the results from the traffic assessment indicate that an upgrade at this intersection is not needed to support the traffic generation from the new school, the council's plan to enhance this intersection in the future will be beneficial to the local traffic environment. However, assessing the cumulative impact of future developments on the local traffic environment is not within the remit of this project and should be addressed separately.

Excluding the background traffic growth of 2.75 per cent per year, the school vehicle trip generation rates will increase traffic volumes in the locality by an approximate average of 34 per cent in the AM peak and 25 per cent in the PM peak (vehicle trip generation of 256 and 192 vehicles in the AM and PM peaks respectively). Whilst this increase will change the immediate local traffic environment, given the existing low traffic volumes and the acceptable results from the intersection assessment, the traffic implications on the local traffic environment are anticipated to be minimal. However, the following measures are recommended and will minimise the impact of the activity on the local traffic environment:

- Stagger the high school bell times with the nearby Medowie Public School bell times (currently occurring at 8:55 AM and 2:50 PM) to minimise the peak traffic conditions during pick-up and drop-off times
- On-going monitoring of the traffic conditions (e.g. identifying any bottlenecks), will support the continuing management of traffic conditions (see the School Travel Plan Appendix D for the proposed monitoring and evaluation plan).

## 4.2 Parking impacts

Considering the proposed plan for staff parking and the kiss & ride area and the demand for kiss & ride based on mode share, it is unlikely that the activity will significantly impact the surrounding on-street parking spaces. However, if some students choose to drive and park at the school, a high-level review of the surrounding on-street parking availability (*Nearmap, 2024*) indicates that there will likely be sufficient parking availability.

*Source: Nearmap, 2024*

Figure 4.2 Visualising the typical parking availability within a 500 metre walk of the new school

A high-level assessment has been conducted to estimate the potential student demand for on-street parking spaces in the local area. The following assumptions / data was used as part of this assessment:

- Only year 11 and 12 students (16 to 17) would be P1 or P2 license holders and therefore eligible to drive to and park at school without parent supervision
- 23 per cent of these students will drive to school in line with the baseline mode share

This assessment analysed the 2024 license holder data against the project 2024 population for Port Stephens and applied the assumptions above to estimate an approximate demand for all day on-street student parking between 10 to 15 spaces. Comparing this demand to the existing on-street parking availability, indicates that the new school site will likely have a minimal impact on the local on-street parking.

However, the following recommendations are made to minimise the impact of the proposed activity on on-street parking availability and reduce parking demand overspill:

- Developing the Travel Access Guide (TAG) to encourage parent pick-up and drop-offs at the kiss and ride bay, to minimise the disruptions to on-street parking
- Staggering bell times with the Medowie Primary School (bell times 8:55 AM and 2:50 PM and peak traffic demand 8:00 AM and 3:00 PM) will minimise the short-term demand for parking particularly along Ferodale Road
- Implementing behaviour change programs (outlined in the School Travel Plan, Appendix D) to encourage a shift to sustainable travel modes.

## 4.3 Public transport impacts

The baseline public transport mode share target of 70 per cent (449 students), will likely result in an increase in demand for public transport in the local area and the increased services can be accommodated by the proposed bus bay. It has been determined that the existing bus network will support the anticipated public transport demand at the new school site.

Whilst there are currently no endorsed plans by TfNSW for updating the public transport services in the local area, it is important that this demand is monitored to assess whether it exceeds the existing service provision / capacity. In the case that it does, the following recommendations have been made:

- Consider providing a dedicated school bus or shuttle bus for the new Medowie High School, that services the local residential areas in Medowie in particular those who are outside the SSTS exclusion zone and are not within a walkable distance of a public transport stop (refer Section 4.5 Catchment Analysis)
- Consider increasing the frequency of existing school bus routes that will support access to the new Medowie High School site
- Consider increasing the frequency of the existing public bus routes that will support access to the new Medowie High School site
- TfNSW, Port Stephens Council and the local bus provider to collaborate in the planning for new services to the high school from the proposed future residential development.

## 4.4 Walking and cycling impacts

The new Medowie High School will see an increase in walking and cycling in the local area. This will result from students walking the last mile of their journeys from bus stops, on-street parking and the kiss and ride bay. The baseline mode share is also targeting 5 per cent of students walking (equivalent to 32 students) and 2 per cent of students cycling (equivalent to 13 students). With this increase in activity, it is important that the infrastructure supports safe access for these students. The following upgrades have been proposed as part of this activity, to support safe access for walking and cycling to the new Medowie High School:

- Proposed footpath along the Abundance Road school frontage as well as the proposed raised pedestrian crossing will support safe access for students walking and cycling to school
- Ensuring that this infrastructure is highly visible through lighting and maintenance will be important for achieving safe outcomes in the long-term
- Ongoing monitoring by staff members to ensure that both students and drivers are acting safely around the school's local roads, as outlined in the School Travel Plan Appendix D.
- Educational and behaviour change programs as outlined in Appendix D School travel plan, to reinforce safe behaviours for walking and cycling to and from school
- Council planning for active transport connections from the proposed future residential development to the high school site.

## 4.5 Catchment Analysis

Analysis was conducted to determine the existing active and public transport catchments, as well as the primary access routes for walking and cycling. This analysis was undertaken for the proposed enrolment of 640 students. Key findings from this analysis include:

- Less than 4 per cent of the forecasted enrolment is within the 15-minute actual walking distance of the high school site
- Over 65 per cent of future enrolments have accessible cycling routes within a 10-15 minutes cycling distance of the high school site, noting that this will be on-road or on footpaths rather than dedicated cycling infrastructure (as outlined in Section 2.3)

- Over 16 per cent (105 students, approximately 44 per cent of students outside the SSTS Exclusion Zone) do not live within walking distance to public transport services to the high school site. It is likely that these students will comprise the group of students who drive or are driven to school
- Gaps exist between notional and actual accessibility via walking and public transport, notably a 10 per cent difference for 400 m accessibility to public transport.

Table 4.3 Catchment Analysis

| | **Catchment analysis** | **Notional (straight line distance)** | | **Actual (along route)** | |
|---|---|---|---|---|---|
| | | **#** | **%** | **#** | **%** |
| Walking | 0 – 400 m (5-minute walk) | 3 | 0.5% | 2 | 0.3% |
| | 401 – 800 m (10-minute walk) | 19 | 3.0% | 8 | 1.3% |
| | 801 – 1,200 m (15-minute walk) | 54 | 8.4% | 15 | 2.3% |
| | 1,201 – 2,000 m (straight line distance)/ 1,200 – 2,900 m on path (excluded from SSTS) | 223 | 34.8% | 374 | 58.4% |
| Cycling | 0 – 2 km (10-minute cycling) | 299 | 46.7% | 141 | 22.0% |
| | 2 – 3 km (15-minute cycling) | 273 | 42.7% | 283 | 44.2% |
| | Beyond 3 km (15+ minutes) | 68 | 10.6% | 216 | 33.8% |
| Public Transport | Within 400 m of public transport | 587 | 91.7% | 444 | 69.4% |
| | Within 800 m of public transport | 633 | 98.9% | 561 | 87.7% |
| | #Outside SSTS zone within 400 m of PT | 205 | 32.0% (85.1% of # outside SSTS zone) | 136 | 21.3% (56.4% of # outside SSTS zone) |
| | #Outside SSTS zone outside 400 m of PT | 36 | 5.6% (14.9% of # outside SSTS zone) | 105 | 16.4% (43.6% of # outside SSTS zone) |

*Source: New Medowie High School Rapid Transport Assessment (WSP, 25/06/24)*

# 5 Design considerations

Throughout the project, the proposed plans for the activity have been reviewed through various swept path assessments. The final plans proposed in this report have been found to be satisfactory and designed in accordance with the relevant DCP and Australian Standards. The following section provides the design assessment for the key features including site access and circulation, car parking, bus parking, mini-bus parking and loading and waste collection design and emergency vehicle routes.

## 5.1 Site Access and Circulation

### *5.1.1 Pedestrians and cyclists*

The proposed pedestrian and cyclist access gates to the school will provide a minimum 2.0 m width (Type 1 as per the Walking Space Guide), meeting the minimum standard for pedestrian and cycling access.

As discussed in Section 3.3.1, the proposed activity includes the provision of a new shared path on Abundance Road, along the school frontage. The design of this shared path will be in accordance with the Type 3 specifications as outlined in the Walking Space Guide (TfNSW, 2020). This includes a path that is 3 metres in width, supporting 70 – 400 pedestrians per hour.

### *5.1.2 Vehicles*

Plans show that vehicle access to the proposed new high school will be via a 6.7m crossover to Ferodale Road providing access to the proposed staff car park and a secondary vehicle access for maintenance and service purposes along Abundance Road located to the south of the site.

The southern aisle within the proposed staff car park is intended to facilitate service and loading movements to and from the Medowie High School where the relevant vehicles will be able to circulate the car park for ingress and egress.

As the ingress/egress and access aisle of the carpark exceeds 30.0m in length, an access aisle width of 6.7m is provided for 25.0m from the property boundary which exceeds the minimum 6.0m requirement under Part B8.C of the Port Stephens Development Control Plan (DCP) and is therefore satisfactory.

## 5.2 Car Parking Design

### *5.2.1 On-site parking*

Plans show that 49 car spaces including three DDA spaces are to be provided on-site within the proposed car park located to the north-west of the site as per the Port Stephens DCP.

Of the car spaces within the car park, the standard spaces are all to have minimum dimensions of 2.5m width by 5.4m length and are to be accessed from an aisle of 6.2m. These dimensions all accord with or exceed the required dimensions as per AS2890.1:2004.

The DDA car spaces within the proposed car park are to be provided at minimum dimensions of 2.4m width by 5.4m length with an adjacent 2.4m wide by 5.4m length shared area. These dimensions all accord with the required dimensions as per AS2890.6:2022.

Based on the above, the car parking spaces have therefore been designed in accordance with the relevant standards and are considered satisfactory for the proposed activity.

### 5.2.2 *Kiss and ride*

The activity proposes that 36m kiss and ride bay to be provided along the site's frontage to Abundance Road allowing up to five standard car spaces.

The kiss and ride bays are to have minimum dimensions of 2.3 metre width by 6.7 metre length with a 0.5 metre safety barrier. These dimensions all accord with or exceed the required dimensions as per AS2890.5:2020 considering that Abundance Road will be signed as 60 km/h outside of school hours (subject to approval from the Traffic Committee).

The provision of signage in accordance with Transport for NSW guidance (R9-302n) is required to support operations at this kiss and ride bay (see Figure 5.1). It is recommended that the kiss and ride bay facilitates general on-street parking outside of the school pick-up and drop-off periods, to help minimise the impact of the activity of on-street parking. This arrangement requires approval from the Local Traffic Committee.


Figure 5.1 R9-302n – Kiss & Ride Area (TfNSW)

Based on the above, the kiss and ride bay has therefore been designed in accordance with the relevant standards and are considered satisfactory for the proposed activity.

## 5.3 Bus Parking Design

A bus bay is to be provided along the site's frontage to Abundance Road north of the parallel standard car spaces. This provision will allow for 30 to 45 buses per hour to access the bus bay per hour (State Transit Bus Infrastructure Guide). This provision is deemed acceptable given the anticipated student demand for public transport services (see Section 3.4.3). Once the school is operational, it is recommended that monitoring is conducted to ensure the bus bay provision is satisfactory. Since this proposal does not suggest any changes to bus services, as the existing conditions will support the baseline public transport mode share target, it is highly unlikely that the arrivals and departures of different public transport services at the designated bus bay will overlap. As has been stated in Section 3.4.3, coach arrivals will have to be coordinated with public bus operations, to ensure the do not interfere.

To ensure the efficiency of the proposed bus bays, the following mitigations have been recommended:

- Operations plans to improve the efficiency of the bus bay
- Ongoing monitoring of traffic volumes on Abundance Road and Ferodale Road, refer to Appendix D for detailed Monitoring and Evaluation plan

The proposed bus bay is to have dimensions of 3.2m width by 49m length, which includes a 15.0m bay and a 14.5m bay, a draw-in length of 14.0m and a draw-out length of 6.5m.This will be accessed from a traffic lane width of 3.5m and will support one bus at any time. This provision supports up to one Austroads 14.5 m long rigid bus (coach) and one Austroads 12.5 m standard bus accessing the bus stop in tandem e.g. the second bus has to wait for the first bus to leave before it too can leave. Alternatively, it allows for two 12.5 m standard buses to use the bus bays at any one time. These dimensions all accord with the required dimensions as per *State Transit – Bus Infrastructure Guide* by TfNSW (Issue 2 - dated July, 2012) and *Guidelines for Public Transport Capable Infrastructure in Greenfield Sites* by TfNSW (dated July, 2018).

Based on the above, the on-street bus bay has been therefore designed in accordance with the relevant standards and guidelines and considered satisfactory for the proposed activity.

## 5.4 Mini-bus Parking Design

As outlined in Section 3.4.1, two mini-bus parking spaces will be provided on site of the new high school. As mini-buses vary in length, the bays are to have dimensions of 2.5m width by 8.5m length which are designed to accommodate up to 7.9m long mini-buses.

A swept path assessment has been undertaken to demonstrate that a 7.9m mini-bus can access the northern car park and access the relevant bays appropriately.

Placing the mini-bus bays near the school buildings ensures easy access to the school and minimizes the need for passengers to walk through the carpark. To ensure compliance with DDA accessibility standards, access ramps will be required from the mini-bus parking to the school. These ramps should be designed in accordance with AS 1428.1:2021, Section 7.3.

Based on the above, the mini-bus bays have therefore been designed appropriately and are considered satisfactory for the proposed activity.

## 5.5 Loading and Waste Collection

On-site loading/servicing and waste collections are to be facilitated via the southern aisle of the proposed staff car park. Loading/servicing and waste collection will occur outside of school operating hours (typically between 5:00 to 7:30 AM) to ensure that surrounding vehicle and pedestrian movement is minimised.

Relevant loading vehicles can enter the site via Ferodale Road and travel towards the south where it will turn and prop along the southern access aisle. For waste collection, the front-lift waste truck will empty the skip/bins at this location with the truck manoeuvring to align itself with the relevant bins. Upon exit, the truck will continue within the car park circulating towards the north before exiting the site in a forwards direction. Swept path diagrams have been prepared to demonstrate that a 10.5m front-lift waste collection truck and 8.8m truck can enter and exit the site in a forwards direction. On this basis, the proposed loading and waste collection arrangements are considered appropriate.

## 5.6 Emergency vehicles

Large emergency vehicles (such as fire appliances) will access the site by driving across the kiss & ride zone to access the site and fire trail along the western side of the site. Smaller emergency vehicles such as ambulances will be able to stop at the kiss & ride during emergencies. A swept path assessment of proposed fire trail and access at the pick-up and drop-off has been undertaken for a 12.5m Austroads Heavy Rigid Vehicle (HRV) (in lieu of a 10.0m NSW Fire & rescue truck) as well as an 8.0m RFS Truck (Cat 1). The results indicate that an HRV is required to turnaround in the grass area immediately adjacent to Block C. For the 8.0m RFS Truck (Cat 1), it can turn around at the fire trail T-intersection on site.

# 6 Construction traffic management

## 6.1 Overview

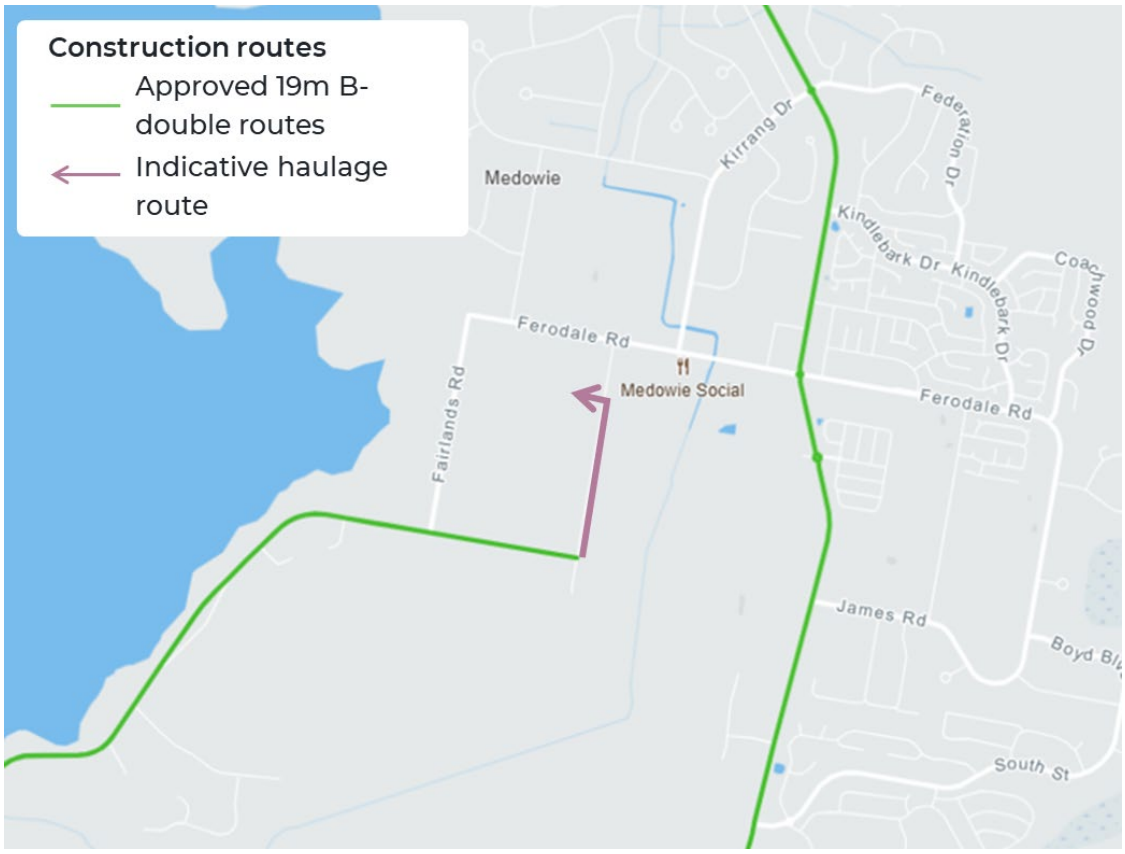
This section outlines a high-level approach to construction traffic management at the new high school site. It is recommended that a detailed Construction Traffic Management Plan (CTMP) is developed once the construction specifications and methodology are determined.

## 6.2 Heavy vehicle access routes

The approved national 19-m B-double network can be used to access Abundance and Ferodale Road during construction activities, as depicted in Figure 6.1. To access the new school site, permits approved by the National Heavy Vehicle Regulator (NHVR) will be needed to utilised Abundance Road and/or Ferodale Road during construction activities. Both approved access roads depicted, provide links to the Pacific Highway (A1), facilitating connections to key destinations along the east-coast of Australia.

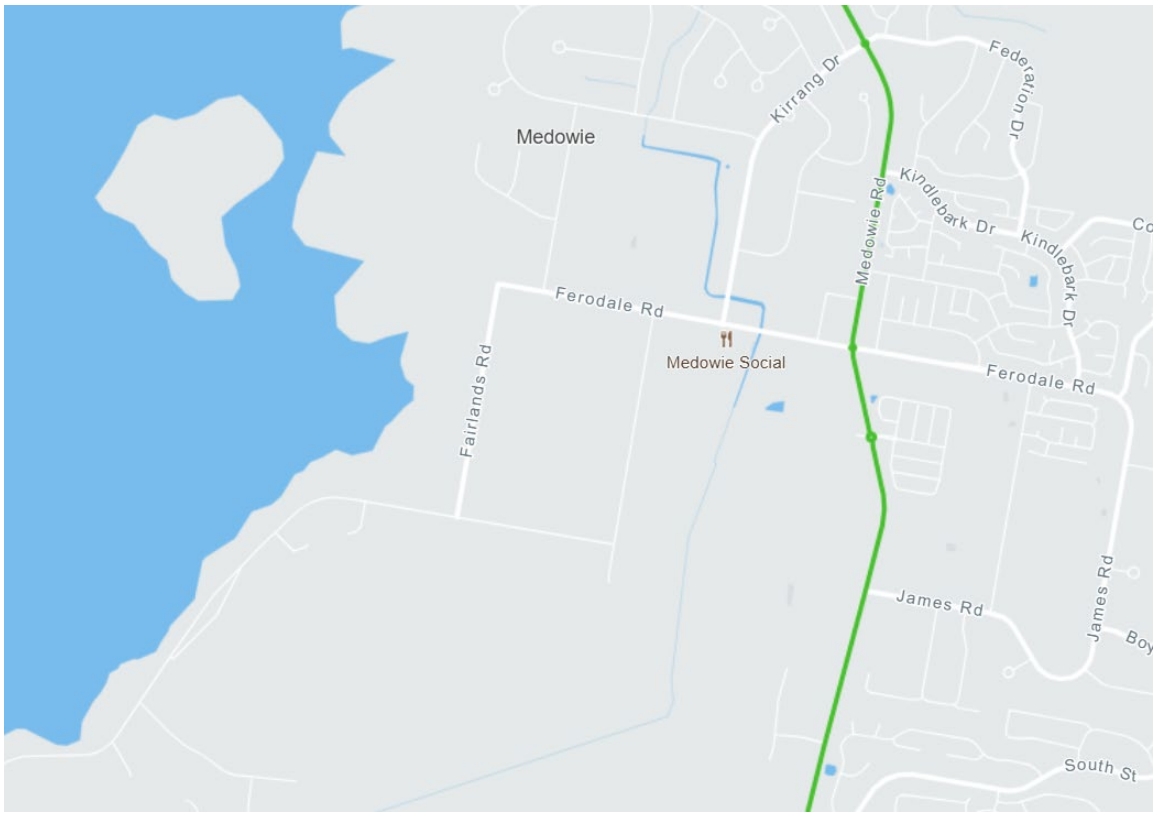
For larger construction vehicles (25/26m B-doubles), Figure 6.2 depicts the NHVR approved route from the north of the site providing access to Ferodale Road.

These heavy vehicles will be permitted to take the shortest route to the school site, which for the 19-m B-double will be from Lisadell Road to Abundance Road and for the 25/26 m B-double will be from Medowie Road, along Ferodale Road to Abundance Road.




*Source: TfNSW Restricted Access Vehicles (RAV) map, National Heavy Vehicle Regulator (NHVR)*

Figure 6.1 Approved 19m B-double routes to be used for construction vehicles




*Source: TfNSW Restricted Access Vehicles (RAV) map, National Heavy Vehicle Regulator (NHVR)*

Figure 6.2 Approved 25/26m B-double routes to be used for construction vehicles

## 6.3 Traffic movements

Indicative worker estimates for construction activities have been determined as follows:

- 60 workers in September to December 2025
- 120 workers in January to March 2026
- 220 workers in April to September 2026
- 40 workers in September to December 2026.

To predict the construction vehicle movements to and from the site in the early stages of construction (60 workers), the following assumptions have been made:

- Assumed one worker per vehicle (conservative estimate)
- Assumed trip generation of 2.5 trips per person (two way combined) for light vehicles
- Assumed approximately 2 trucks travelling to and from the site each day

As such the predicted construction vehicle movements for 60 workers travelling to and from the site, are summarised in Table 6.1.

Table 6.1 Indicative construction traffic movements

| Time period | Worker light vehicles | | Trucks | | All vehicles | |
|---|---|---|---|---|---|---|
| | In | Out | In | Out | In | Out |
| AM inbound | 60 | - | 2 | - | 62 | - |
| Day construction hours | 15 | 15 | 18 | 18 | 33 | 33 |
| PM outbound | - | 60 | - | 2 | - | 62 |
| **Daily** | **75** | **75** | **20** | **20** | **95** | **95** |

These indicative movement volumes represent preliminary estimates for short-term construction activities (60 workers) and therefore need to be further refined as part of the Constructor's Traffic Management Plan.

## 6.4 Site parking

Site parking for construction vehicles is recommended to be supported on the new school site, with access supported by a temporary driveway off Abundance Road, which typically experiences lower traffic volumes compared with Ferodale Road (see Section 2.6). On-site parking will likely support 50 to 60 workers accessing the site, however increasers in the numbers of workers may require further parking provision. In the situation where on-street parking is required, it is recommended that Abundance Road is used as a work zone. Approval from the Port Stephens Council will be needed to facilitate this.

## 6.5 Construction traffic management

To minimise the impact of construction activities on the local traffic environment, it is recommended that construction vehicle access to the site is timed so as to not interfere with the AM and PM peaks as well as pick-up and drop-off times at Medowie Public School. This will help minimise the safety implications of construction vehicle activities as well as reducing traffic congestion along the local streets. As discussed in Section 2.6.1, the AM and PM peaks occur between 8:15 to 9:15 AM and 2:30 to 3:30 PM, also coinciding with Medowie Public School's pick-up and drop-off periods. It is recommended that construction vehicle access to the site occurs outside of the School Speed Zone times. A high level review of traffic volumes indicates that the additional construction vehicle movements in the short-term (supporting 60 workers) will not result in traffic volumes increase above what is currently experienced during the peak, during off-peak periods. It is therefore anticipated that the local road network will be able to accommodate these movements. However the impact of more than 60 workers accessing the site will need to be assessed in the Constructor's Traffic Management Plan.

It is also recommended that a traffic controller monitors construction vehicle access to and from the site to ensure safety and minimise congestion and disruption to the traffic environment on Abundance Road.

# 7 Mitigation measures

The following mitigation measures have been identified throughout the report, to ensure the proposed infrastructure fulfills its purpose and minimise the impact of the activity on the local traffic environment.

Table 7.1 Mitigation measures

| Measure | Status |
|---|---|
| **Active travel** | |
| The provision of a shared path along the site frontage as well as pedestrian crossing points will minimise the safety risks for students and staff walking and cycling to the new school site. | Included in plan |
| Ensure the visibility and on-going maintenance of the active transport infrastructure for accessing the school. | Further measure |
| On-site futureproofing for increased bicycle parking demand in alignment with the sustainable mode share scenario targets outlined in the STP. | |
| Implement school zone travel speed restrictions along Ferodale Road and Abundance Road frontages to the school. It is important that the local community is notified of the changes to the speed restrictions well before the school opens, to help enforce a lower speed environment from day one. | Included in plan |
| Educational and behaviour change programs as outlined in the STP, to reinforce safe practises for walking and cycling to and from school. | Further measure |
| **Public transport** | |
| Whilst there are currently no endorsed plans by TfNSW for updating the public transport services in the local area, it is important that this demand is monitored to assess whether it exceeds the existing service provision / capacity. It is recommended that the school and TfNSW further collaborate once the new school is operational, to assess the actual demand for public transport and implement any service changes necessary to support e.g. dedicated shuttles, increasing existing service frequency or upgrades to the bus network. | Further measure |
| Encourage students at the new high school to use public transport to travel to and from school, by developing educational and behaviour change programs such as the Travel Access Guide (TAG) as outlined in the STP. | Further measure |
| **Traffic and intersection performance** | |
| To reduce the traffic and on-street parking impact of the proposed school site, it is recommended that the bell times for the new Medowie High School are staggered with Medowie Public School, to help spread the peak over a longer duration. | Further measure |
| The traffic impact assessment indicates that the existing intersection layout of Ferodale and Abundance Road can provide suitable performance for the proposed high school. | Included in plan |
| Implement the behaviour change programs set out in the School Travel Plan to encourage a shift to sustainable travel modes. | Further measure |
| **Kiss and ride operations** | |

| Measure | Status |
|---|---|
| Notify students and parents of the proposed access routes to the site as recommended in the School Travel Plan. | Further measure |
| Ongoing monitoring of kiss and ride operations in line with the recommendations made in the STP. | Further measure |
| **Construction activities** | |
| Heavy vehicle traffic should follow the Construction Vehicle Traffic Route outlined in Section 6.2. Where possible, general construction traffic should avoid travelling past the Medowie Public School during School Zone hours. | |
| Support construction vehicle access and egress by providing a traffic controller at the entrance to the site. | |
| Develop a detailed Construction Traffic Management Plan to identify and provide management strategies for the future construction activities at the site. | |

# 8 Conclusion

The review of the proposed activity indicates that the transport and parking impacts of the new Medowie High School have been addressed and managed.

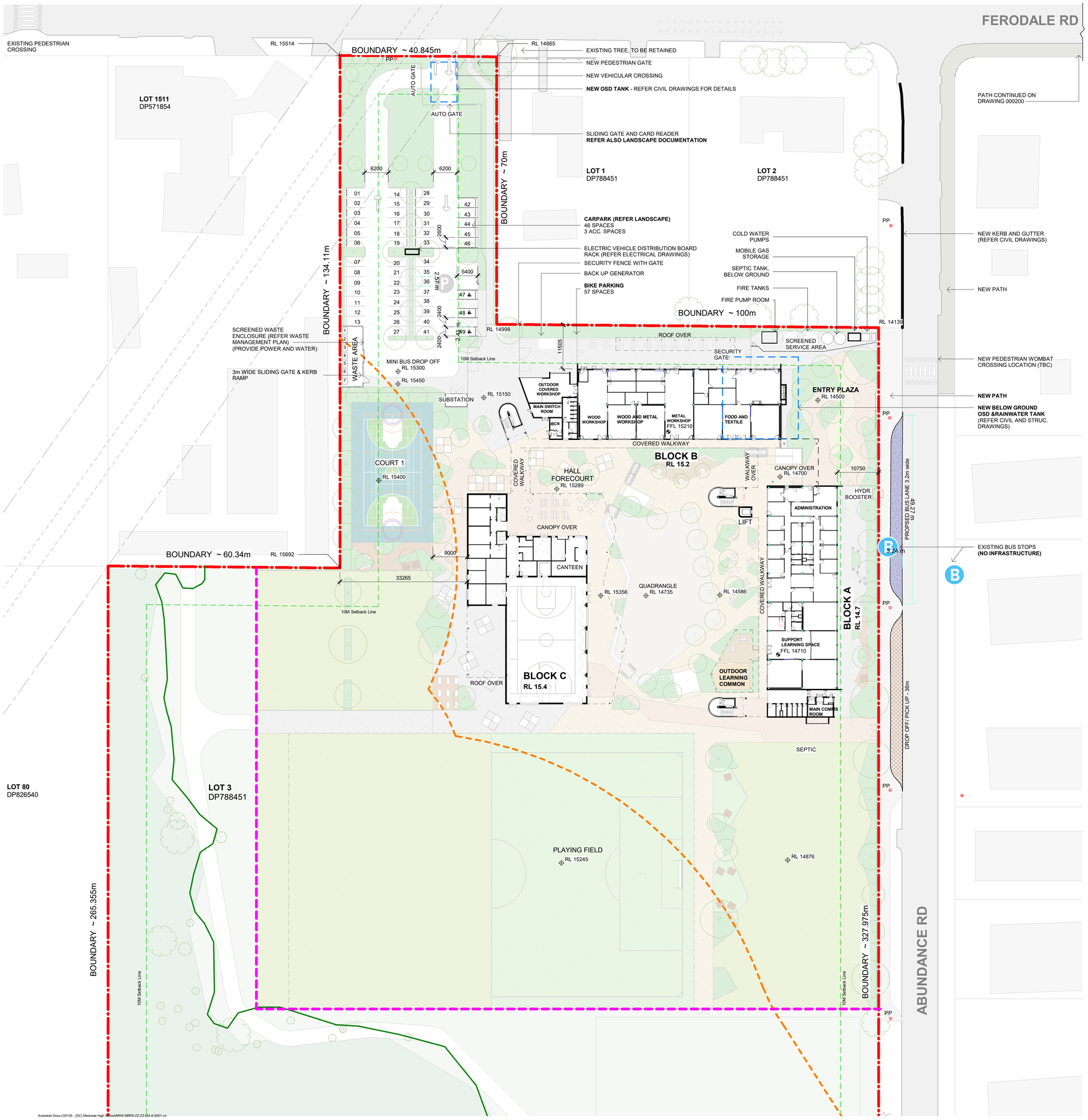
Active travel to and from the site will be supported by improvements to footpaths on the Abundance Road frontage as well as providing crossing points at key pedestrian and cyclist desire lines. Cyclists will also be supported by a sufficient provision of on-site parking facilities. The proposed shared paths outlined in the Medowie Planning Strategy will support the future anticipated growth in the Medowie region and it is recommended that this is pursued as part of council's development works.

It has been concluded that the provision for 15 buses to access the site per hour will support the anticipated public transport demand in the baseline mode share scenario. However, ongoing monitoring of public transport demand, potentially also resulting from the new local developments, is recommended and should be undertaken by council and TfNSW. At the site it is recommended that staff of the new Medowie High School support efficient bus operations at the school's bus bay, to minimise the risk of disruptions and bottlenecks (as outlined in the School Travel Plan).

The analysis of the intersection of Ferodale Road and Abundance Road under the new site conditions indicates that the performance will be suitable. Staggering of bell times with Medowie Public Schol. is recommended to minimise vehicle movements when students are accessing the local street environment.

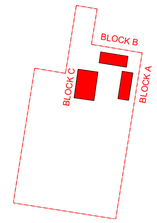
# Appendix A

REF Plans




**LEGEND**

- BIODIVERSITY VALUE MAP
- FLOOD ZONE BOUNDARY
- 10m SETBACK LINE
- APZ ZONE EXTENT
- INDICATIVE SCHOOL/ FENCING BOUNDARY
- INGROUND OSD TANK
- HV POWER LINES & ASSOCIATED EASEMENT
- PICK UP AND DROP OFF
- BUS ZONE
- B EXISTING BUS BAY
- P CAR PARK
- PP EXISTING POWER POLE




KEY PLAN

**SUMMARY OF AREAS**

| Function | Area | SLU Total | Special Teaching Space Total | Workshop /Labs Totals | Teaching Space Totals |
|---|---|---|---|---|---|
| | 11 m² | 0 | 0 | 0 | 0 |
| AMENITIES | 130 m² | 0 | 0 | 0 | 0 |
| HS 101 GENERAL LEARNING SPACES | 1228 m² | 0 | 0 | 0 | 14 |
| HS 101.03 LEARNING COMMONS | 345 m² | 0 | 0 | 0 | 0 |
| HS 102 GENERAL LEARNING SPACES (SUPPORT) | 517 m² | 3 | 0 | 0 | 0 |
| HS 201 ADMINISTRATION HUB | 369 m² | 0 | 0 | 0 | 0 |
| HS 202 STAFF HUB | 413 m² | 0 | 0 | 0 | 0 |
| HS 203 GYMNASIUM + CANTEEN | 977 m² | 0 | 0 | 0 | 0 |
| HS 204 LIBRARY HUB | 528 m² | 0 | 1 | 0 | 0 |
| HS 301 SCIENCE LEARNING HUB | 332 m² | 0 | 2 | 1 | 0 |
| HS 302 VISUAL ARTS LEARNING HUB | 326 m² | 0 | 2 | 1 | 0 |
| HS 303 WOOD + METAL TECHNOLOGY LEARNING HUB | 608 m² | 0 | 2 | 2 | 0 |
| HS 304 FOOD + TEXTILES LEARNING HUB | 392 m² | 0 | 2 | 1 | 0 |
| HS 305 HEALTH/PE LEARNING HUB | 315 m² | 0 | 2 | 1 | 0 |
| HS 306 PERFORMING ARTS LEARNING HUB | 263 m² | 0 | 2 | 1 | 0 |
| HS 401 STUDENT AMENITIES | 119 m² | 0 | 0 | 0 | 0 |
| HS 402 OTHER STORAGE | 46 m² | 0 | 0 | 0 | 0 |
| HS 501 OUTDOOR AREAS | 191 m² | 0 | 0 | 0 | 0 |
| HS CIRCULATION | 1167 m² | 0 | 0 | 0 | 0 |
| HS SERVICES | 468 m² | 0 | 0 | 0 | 0 |
| SERVICES | 13 m² | 0 | 0 | 0 | 0 |
| VER | 7 m² | 0 | 0 | 0 | 0 |
| Grand total: 218 | 8766 m² | 3 | 13 | 7 | 14 |

**REF**

Issue

| No. | Date | Description | Chkd |
|---|---|---|---|
| 1 | 2024/11/29 | ISSUE FOR DRAFT REF | |
| 2 | 2025/01/15 | DRAFT REF (FINAL ISSUE) | |

Changes to this Revision

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Jonathan West NSW 9899
NBRS & Partners Pty Ltd VIC 51197 ABN 16 002 247 565

Project
24135 - MEDOWIE HIGH SCHOOL

at
6 Abundance Rd, Medowie NSW 2318

NSW GOVERNMENT Education

Drawing Title
SITE PLAN

Date 15/01/2025 11:44:44 AM
Scale 1:500 @ A1
NBRS Project # 24135
Drawing Reference MHS-NBRS-ZZ-ZZ-DR-A-000201
Revision 2

0 5m 10m 15m 20m 25m 30m 35m 40m 1:500

# Appendix B

Survey Data

# TRANS TRAFFIC SURVEY

## TURNING MOVEMENT SURVEY

trafficsurvey.com.au

**Intersection of Ferodale Rd and Abundance Rd, Medowie**

| | |
|---|---|
| GPS | -32.739779, 151.856496 |
| Date: | Thu 22/08/24 |
| Weather: | Overcast |
| Suburban: | Medowie |
| Customer: | N/A |

| | |
|---|---|
| North: | N/A |
| East: | Ferodale Rd |
| South: | Abundance Rd |
| West: | Ferodale Rd |

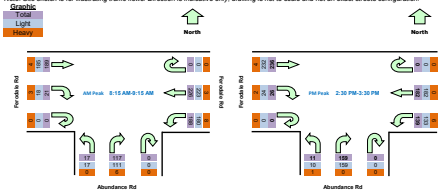
| | | |
|---|---|---|
| Survey Period | AM: | 7:00 AM-10:00 AM |
| | PM: | 2:00 PM-7:00 PM |
| Traffic Peak | AM: | 8:15 AM-9:15 AM |
| | PM: | 2:30 PM-3:30 PM |

*All Vehicles*

| Time | | East Approach Ferodale Rd | | | South Approach Abundance R | | | West Approach Ferodale Rd | | | Hourly Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Star | Period End | U | WB | L | U | R | L | U | R | EB | Hour | Peak |
| 7:00 | 7:15 | 0 | 15 | 25 | 0 | 37 | 3 | 0 | 2 | 19 | 397 | |
| 7:15 | 7:30 | 0 | 21 | 30 | 0 | 23 | 2 | 0 | 1 | 18 | 430 | |
| 7:30 | 7:45 | 0 | 21 | 22 | 0 | 18 | 1 | 0 | 1 | 17 | 515 | |
| 7:45 | 8:00 | 0 | 34 | 44 | 0 | 24 | 2 | 0 | 1 | 16 | 653 | |
| 8:00 | 8:15 | 0 | 40 | 39 | 0 | 26 | 3 | 0 | 0 | 26 | 757 | |
| 8:15 | 8:30 | 0 | 59 | 45 | 0 | 31 | 4 | 0 | 3 | 38 | 758 | Peak |
| 8:30 | 8:45 | 0 | 89 | 52 | 0 | 18 | 3 | 0 | 11 | 45 | 698 | |
| 8:45 | 9:00 | 0 | 52 | 48 | 0 | 37 | 8 | 0 | 5 | 75 | 593 | |
| 9:00 | 9:15 | 0 | 26 | 43 | 0 | 31 | 2 | 0 | 2 | 31 | 482 | |
| 9:15 | 9:30 | 0 | 30 | 30 | 0 | 33 | 4 | 0 | 4 | 19 | | |
| 9:30 | 9:45 | 0 | 26 | 42 | 0 | 22 | 2 | 0 | 1 | 20 | | |
| 9:45 | 10:00 | 0 | 19 | 34 | 0 | 32 | 3 | 0 | 1 | 25 | | |
| 14:00 | 14:15 | 0 | 29 | 33 | 0 | 36 | 3 | 0 | 0 | 16 | 588 | |
| 14:15 | 14:30 | 0 | 29 | 37 | 0 | 33 | 3 | 0 | 3 | 25 | 660 | |
| 14:30 | 14:45 | 0 | 50 | 35 | 0 | 36 | 2 | 0 | 3 | 29 | 753 | Peak |
| 14:45 | 15:00 | 0 | 59 | 33 | 0 | 34 | 2 | 0 | 11 | 47 | 743 | |
| 15:00 | 15:15 | 0 | 43 | 35 | 0 | 38 | 5 | 0 | 5 | 63 | 745 | |
| 15:15 | 15:30 | 0 | 30 | 36 | 0 | 51 | 2 | 0 | 7 | 97 | 695 | |
| 15:30 | 15:45 | 0 | 19 | 34 | 0 | 56 | 0 | 0 | 3 | 33 | 645 | |
| 15:45 | 16:00 | 0 | 30 | 26 | 0 | 71 | 4 | 0 | 0 | 57 | 660 | |
| 16:00 | 16:15 | 0 | 20 | 30 | 0 | 53 | 1 | 0 | 2 | 33 | 614 | |
| 16:15 | 16:30 | 0 | 30 | 37 | 0 | 61 | 2 | 0 | 5 | 38 | 637 | |
| 16:30 | 16:45 | 0 | 27 | 33 | 0 | 53 | 4 | 0 | 2 | 41 | 610 | |
| 16:45 | 17:00 | 0 | 24 | 29 | 0 | 50 | 1 | 0 | 0 | 38 | 593 | |
| 17:00 | 17:15 | 0 | 32 | 35 | 0 | 53 | 0 | 0 | 3 | 39 | 563 | |
| 17:15 | 17:30 | 0 | 20 | 30 | 0 | 53 | 1 | 0 | 0 | 42 | 501 | |
| 17:30 | 17:45 | 0 | 27 | 30 | 0 | 51 | 0 | 0 | 2 | 33 | 436 | |
| 17:45 | 18:00 | 0 | 23 | 30 | 0 | 28 | 0 | 0 | 0 | 31 | 371 | |
| 18:00 | 18:15 | 0 | 23 | 13 | 0 | 33 | 0 | 0 | 0 | 31 | 321 | |
| 18:15 | 18:30 | 0 | 13 | 21 | 0 | 29 | 1 | 0 | 1 | 16 | | |
| 18:30 | 18:45 | 0 | 10 | 22 | 0 | 35 | 0 | 0 | 0 | 11 | | |
| 18:45 | 19:00 | 0 | 12 | 9 | 0 | 25 | 0 | 0 | 0 | 16 | | |

| Peak Time | | East Approach Ferodale Rd | | | South Approach Abundance R | | | West Approach Ferodale Rd | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Star | Period End | U | WB | L | U | R | L | U | R | EB | total |
| 8:15 | 9:15 | 0 | 226 | 188 | 0 | 117 | 17 | 0 | 21 | 189 | 758 |
| 14:30 | 15:30 | 0 | 182 | 139 | 0 | 159 | 11 | 0 | 26 | 236 | 753 |

*Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.*




*Light Vehicles*

| Time | | East Approach Ferodale Rd | | | South Approach Abundance R | | | West Approach Ferodale Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Star | Period End | U | WB | L | U | R | L | U | R | EB | |
| 7:00 | 7:15 | 0 | 15 | 23 | 0 | 33 | 3 | 0 | 2 | 18 | |
| 7:15 | 7:30 | 0 | 18 | 28 | 0 | 18 | 2 | 0 | 1 | 17 | |
| 7:30 | 7:45 | 0 | 20 | 22 | 0 | 12 | 0 | 0 | 0 | 16 | |
| 7:45 | 8:00 | 0 | 33 | 43 | 0 | 22 | 2 | 0 | 1 | 15 | |
| 8:00 | 8:15 | 0 | 40 | 39 | 0 | 26 | 3 | 0 | 0 | 23 | |
| 8:15 | 8:30 | 0 | 59 | 43 | 0 | 29 | 4 | 0 | 2 | 38 | |
| 8:30 | 8:45 | 0 | 86 | 50 | 0 | 18 | 3 | 0 | 10 | 44 | |
| 8:45 | 9:00 | 0 | 52 | 45 | 0 | 36 | 8 | 0 | 4 | 72 | |
| 9:00 | 9:15 | 0 | 26 | 42 | 0 | 28 | 2 | 0 | 2 | 31 | |
| 9:15 | 9:30 | 0 | 30 | 29 | 0 | 32 | 4 | 0 | 4 | 18 | |
| 9:30 | 9:45 | 0 | 26 | 40 | 0 | 22 | 2 | 0 | 1 | 20 | |
| 9:45 | 10:00 | 0 | 19 | 32 | 0 | 30 | 3 | 0 | 1 | 25 | |
| 14:00 | 14:15 | 0 | 27 | 32 | 0 | 34 | 3 | 0 | 0 | 16 | |
| 14:15 | 14:30 | 0 | 29 | 35 | 0 | 32 | 3 | 0 | 3 | 25 | |
| 14:30 | 14:45 | 0 | 50 | 34 | 0 | 36 | 2 | 0 | 3 | 29 | |
| 14:45 | 15:00 | 0 | 59 | 32 | 0 | 34 | 2 | 0 | 11 | 46 | |
| 15:00 | 15:15 | 0 | 43 | 33 | 0 | 38 | 5 | 0 | 5 | 62 | |
| 15:15 | 15:30 | 0 | 30 | 34 | 0 | 51 | 1 | 0 | 5 | 95 | |
| 15:30 | 15:45 | 0 | 18 | 34 | 0 | 53 | 0 | 0 | 3 | 32 | |
| 15:45 | 16:00 | 0 | 29 | 21 | 0 | 70 | 4 | 0 | 0 | 56 | |
| 16:00 | 16:15 | 0 | 17 | 28 | 0 | 51 | 1 | 0 | 0 | 31 | |
| 16:15 | 16:30 | 0 | 27 | 36 | 0 | 61 | 2 | 0 | 5 | 37 | |
| 16:30 | 16:45 | 0 | 26 | 29 | 0 | 52 | 4 | 0 | 2 | 40 | |
| 16:45 | 17:00 | 0 | 24 | 27 | 0 | 48 | 1 | 0 | 0 | 36 | |
| 17:00 | 17:15 | 0 | 32 | 34 | 0 | 53 | 0 | 0 | 3 | 38 | |
| 17:15 | 17:30 | 0 | 20 | 30 | 0 | 52 | 1 | 0 | 0 | 42 | |
| 17:30 | 17:45 | 0 | 27 | 28 | 0 | 49 | 0 | 0 | 2 | 33 | |
| 17:45 | 18:00 | 0 | 23 | 28 | 0 | 28 | 0 | 0 | 0 | 31 | |
| 18:00 | 18:15 | 0 | 23 | 13 | 0 | 31 | 0 | 0 | 0 | 30 | |
| 18:15 | 18:30 | 0 | 13 | 21 | 0 | 29 | 1 | 0 | 1 | 15 | |
| 18:30 | 18:45 | 0 | 10 | 21 | 0 | 34 | 0 | 0 | 0 | 11 | |
| 18:45 | 19:00 | 0 | 12 | 9 | 0 | 25 | 0 | 0 | 0 | 15 | |

| Peak Time | | East Approach Ferodale Rd | | | South Approach Abundance R | | | West Approach Ferodale Rd | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Star | Period End | U | WB | L | U | R | L | U | R | EB | total |
| 8:15 | 9:15 | 0 | 223 | 180 | 0 | 111 | 17 | 0 | 18 | 185 | 734 |
| 14:30 | 15:30 | 0 | 182 | 133 | 0 | 159 | 10 | 0 | 24 | 232 | 740 |

*Heavy Vehicles*

| Time | | East Approach Ferodale Rd | | | South Approach Abundance R | | | West Approach Ferodale Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Star | Period End | U | WB | L | U | R | L | U | R | EB | |
| 7:00 | 7:15 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 1 | |
| 7:15 | 7:30 | 0 | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 1 | |
| 7:30 | 7:45 | 0 | 1 | 0 | 0 | 6 | 1 | 0 | 1 | 1 | |
| 7:45 | 8:00 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | |
| 8:00 | 8:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 8:15 | 8:30 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | |
| 8:30 | 8:45 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | |
| 8:45 | 9:00 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 3 | |
| 9:00 | 9:15 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | |
| 9:15 | 9:30 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | |
| 9:30 | 9:45 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 9:45 | 10:00 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | |
| 14:00 | 14:15 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | |
| 14:15 | 14:30 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 14:30 | 14:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 14:45 | 15:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 15:00 | 15:15 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 15:15 | 15:30 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 | 2 | |
| 15:30 | 15:45 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | |
| 15:45 | 16:00 | 0 | 1 | 5 | 0 | 1 | 0 | 0 | 0 | 1 | |
| 16:00 | 16:15 | 0 | 3 | 2 | 0 | 2 | 0 | 0 | 2 | 2 | |
| 16:15 | 16:30 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 16:30 | 16:45 | 0 | 1 | 4 | 0 | 1 | 0 | 0 | 0 | 1 | |
| 16:45 | 17:00 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 2 | |
| 17:00 | 17:15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 17:15 | 17:30 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 17:30 | 17:45 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | |
| 17:45 | 18:00 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 18:00 | 18:15 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | |
| 18:15 | 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 18:30 | 18:45 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 18:45 | 19:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |

| Peak Time | | East Approach Ferodale Rd | | | South Approach Abundance R | | | West Approach Ferodale Rd | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Star | Period End | U | WB | L | U | R | L | U | R | EB | total |
| 8:15 | 9:15 | 0 | 3 | 8 | 0 | 6 | 0 | 0 | 3 | 4 | 24 |
| 14:30 | 15:30 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 2 | 4 | 13 |

# Appendix C

SIDRA Results

| Excel ID | ID | Description | Control | | Intersection Average | | | | | | | | | Movement with Longest Delay | | | | Movement with Longest Queue | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Approach | Approach | Row | Total Vehicles | Degree of Saturation | Average Delay (s) | 95% Queue (m) | LOS | Movement Name | Movement Name | Delay (s) | LOS | Movement Name | Movement Name | 95% Queue Length (m) |
| I-01 | | Ferodale Rd / Abundance Rd - Existing Conditions - AM Peak | Stop | I-01 | S | Abundance Road | 3 | 9 | 141 | 0.22 | 11.8 | 5.7 | A | R2 | Right-Turn | 12.2 | A | L2 | Left-Turn | 6 |
| | | | | I-01 | E | Ferodale Road | 5 | 13 | 436 | 0.22 | 2.6 | 0.0 | A | L2 | Left-Turn | 5.6 | A | L2 | Left-Turn | 0 |
| | | | | I-01 | W | Ferodale Road | 12 | 17 | 221 | 0.12 | 1.1 | 1.8 | A | R2 | Right-Turn | 7.8 | A | T1 | Through | 2 |
| | | | | I-01 | | Overall | | #N/A | 798 | 0.22 | - | 5.7 | - | | | | | | | |
| I-02 | | Ferodale Rd / Abundance Rd - Existing Conditions - PM Peak | Stop | I-02 | S | Abundance Road | 3 | 35 | 179 | 0.27 | 11.5 | 7.3 | A | R2 | Right-Turn | 11.6 | A | L2 | Left-Turn | 7 |
| | | | | I-02 | E | Ferodale Road | 5 | 39 | 338 | 0.17 | 2.5 | 0.0 | A | L2 | Left-Turn | 5.6 | A | L2 | Left-Turn | 0 |
| | | | | I-02 | W | Ferodale Road | 12 | 43 | 276 | 0.14 | 0.9 | 1.8 | A | R2 | Right-Turn | 7.0 | A | T1 | Through | 2 |
| | | | | I-02 | | Overall | | #N/A | 793 | 0.27 | - | 7 | - | | | | | | | |
| I-03 | | Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2026 - AM Peak | Stop | I-03 | S | Abundance Road | 3 | 60 | 214 | 0.37 | 13.8 | 12 | A | R2 | Right-Turn | 14.8 | B | L2 | Left-Turn | 12 |
| | | | | I-03 | E | Ferodale Road | 5 | 64 | 537 | 0.27 | 2.8 | 0 | A | L2 | Left-Turn | 5.6 | A | L2 | Left-Turn | 0 |
| | | | | I-03 | W | Ferodale Road | 12 | 68 | 269 | 0.16 | 2.7 | 5 | A | R2 | Right-Turn | 8.2 | A | T1 | Through | 5 |
| | | | | I-03 | | Overall | | #N/A | 1020 | 0.37 | - | 12 | - | | | | | | | |
| I-04 | | Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2026 - PM Peak | Stop | I-04 | S | Abundance Road | 3 | 85 | 226 | 0.37 | 13.1 | 12 | A | R2 | Right-Turn | 13.5 | A | L2 | Left-Turn | 12 |
| | | | | I-04 | E | Ferodale Road | 5 | 89 | 393 | 0.19 | 2.8 | 0 | A | L2 | Left-Turn | 5.6 | A | L2 | Left-Turn | 0 |
| | | | | I-04 | W | Ferodale Road | 12 | 93 | 337 | 0.18 | 1.6 | 4 | A | R2 | Right-Turn | 7.3 | A | T1 | Through | 4 |
| | | | | I-04 | | Overall | | #N/A | 956 | 0.37 | - | 12 | - | | | | | | | |
| I-05 | | Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2036 - AM Peak | Stop | I-05 | S | Abundance Road | 3 | 109 | 260 | 0.59 | 19.6 | 24 | B | R2 | Right-Turn | 21.2 | B | L2 | Left-Turn | 24 |
| | | | | I-05 | E | Ferodale Road | 5 | 113 | 680 | 0.34 | 2.8 | 0 | A | L2 | Left-Turn | 5.7 | A | L2 | Left-Turn | 0 |
| | | | | I-05 | W | Ferodale Road | 12 | 117 | 342 | 0.22 | 3.2 | 7 | A | R2 | Right-Turn | 9.7 | A | T1 | Through | 7 |
| | | | | I-05 | | Overall | | #N/A | 1282 | 0.59 | - | 24 | - | | | | | | | |
| I-06 | | Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2036 - PM Peak | Stop | I-06 | S | Abundance Road | 3 | 134 | 284 | 0.59 | 18.3 | 24 | B | R2 | Right-Turn | 19.0 | B | L2 | Left-Turn | 24 |
| | | | | I-06 | E | Ferodale Road | 5 | 138 | 504 | 0.25 | 2.7 | 0 | A | L2 | Left-Turn | 5.6 | A | L2 | Left-Turn | 0 |
| | | | | I-06 | W | Ferodale Road | 12 | 142 | 428 | 0.24 | 1.8 | 5 | A | R2 | Right-Turn | 8.1 | A | T1 | Through | 5 |
| | | | | I-06 | | Overall | | #N/A | 1216 | 0.59 | - | 24 | - | | | | | | | |
| I-07 | | Ferodale Rd / Abundance Rd - Stage 2 - PostDev 2036 - AM Peak | Stop | I-07 | S | Abundance Road | 3 | 159 | 317 | 0.78 | 26.3 | 42 | B | R2 | Right-Turn | 28.7 | C | L2 | Left-Turn | 42 |
| | | | | I-07 | E | Ferodale Road | 5 | 163 | 745 | 0.37 | 2.9 | 0 | A | L2 | Left-Turn | 5.7 | A | L2 | Left-Turn | 0 |
| | | | | I-07 | W | Ferodale Road | 12 | 167 | 374 | 0.27 | 4.7 | 10 | A | R2 | Right-Turn | 10.3 | A | T1 | Through | 10 |
| | | | | I-07 | | Overall | | #N/A | 1436 | 0.78 | - | 42 | - | | | | | | | |
| I-08 | | Ferodale Rd / Abundance Rd - Stage 2 - PostDev 2036 - PM Peak | Stop | I-08 | S | Abundance Road | 3 | 184 | 320 | 0.70 | 21.6 | 34 | B | R2 | Right-Turn | 22.7 | B | L2 | Left-Turn | 34 |
| | | | | I-08 | E | Ferodale Road | 5 | 188 | 536 | 0.27 | 2.9 | 0 | A | L2 | Left-Turn | 5.6 | A | L2 | Left-Turn | 0 |
| | | | | I-08 | W | Ferodale Road | 12 | 192 | 465 | 0.27 | 2.4 | 7 | A | R2 | Right-Turn | 8.3 | A | T1 | Through | 7 |
| | | | | I-08 | | Overall | | #N/A | 1321 | 0.70 | - | 34 | - | | | | | | | |

# MOVEMENT SUMMARY

## Site: 101 [Ferodale Rd / Abundance Rd - Existing Conditions - AM Peak (Site Folder: Existing Layout - KS)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: (None)
Stop (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Abundance Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 18 | 0.0 | 18 | 0.0 | 0.222 | 9.1 | LOS A | 0.8 | 5.7 | 0.53 | 0.96 | 0.53 | 49.3 |
| 3 | R2 | All MCs | 123 | 5.1 | 123 | 5.1 | 0.222 | 12.2 | LOS A | 0.8 | 5.7 | 0.53 | 0.96 | 0.53 | 49.0 |
| Approach | | | 141 | 4.5 | 141 | 4.5 | 0.222 | 11.8 | LOS A | 0.8 | 5.7 | 0.53 | 0.96 | 0.53 | 49.1 |
| East: Ferodale Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 198 | 4.3 | 198 | 4.3 | 0.217 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.27 | 0.00 | 55.1 |
| 5 | T1 | All MCs | 238 | 1.3 | 238 | 1.3 | 0.217 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.27 | 0.00 | 57.6 |
| Approach | | | 436 | 2.7 | 436 | 2.7 | 0.217 | 2.6 | NA | 0.0 | 0.0 | 0.00 | 0.27 | 0.00 | 56.4 |
| West: Ferodale Road | | | | | | | | | | | | | | | |
| 11 | T1 | All MCs | 199 | 2.1 | 199 | 2.1 | 0.119 | 0.4 | LOS A | 0.2 | 1.8 | 0.14 | 0.16 | 0.14 | 58.9 |
| 12 | R2 | All MCs | 22 | 14.3 | 22 | 14.3 | 0.119 | 7.8 | LOS A | 0.2 | 1.8 | 0.14 | 0.16 | 0.14 | 55.6 |
| Approach | | | 221 | 3.3 | 221 | 3.3 | 0.119 | 1.1 | NA | 0.2 | 1.8 | 0.14 | 0.16 | 0.14 | 58.6 |
| All Vehicles | | | 798 | 3.2 | 798 | 3.2 | 0.222 | 3.8 | NA | 0.8 | 5.7 | 0.13 | 0.36 | 0.13 | 55.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

## Site: 101 [Ferodale Rd / Abundance Rd - Existing Conditions - PM Peak (Site Folder: Existing Layout - KS)]

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

New Site
Site Category: (None)
Stop (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Abundance Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 12 | 9.1 | 12 | 9.1 | 0.267 | 9.5 | LOS A | 1.0 | 7.3 | 0.53 | 0.97 | 0.56 | 49.1 |
| 3 | R2 | All MCs | 167 | 0.0 | 167 | 0.0 | 0.267 | 11.6 | LOS A | 1.0 | 7.3 | 0.53 | 0.97 | 0.56 | 49.3 |
| Approach | | | 179 | 0.6 | 179 | 0.6 | 0.267 | 11.5 | LOS A | 1.0 | 7.3 | 0.53 | 0.97 | 0.56 | 49.3 |
| East: Ferodale Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 146 | 4.3 | 146 | 4.3 | 0.167 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.26 | 0.00 | 55.2 |
| 5 | T1 | All MCs | 192 | 0.0 | 192 | 0.0 | 0.167 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.26 | 0.00 | 57.7 |
| Approach | | | 338 | 1.9 | 338 | 1.9 | 0.167 | 2.5 | NA | 0.0 | 0.0 | 0.00 | 0.26 | 0.00 | 56.6 |
| West: Ferodale Road | | | | | | | | | | | | | | | |
| 11 | T1 | All MCs | 248 | 1.7 | 248 | 1.7 | 0.143 | 0.2 | LOS A | 0.3 | 1.8 | 0.12 | 0.13 | 0.12 | 59.0 |
| 12 | R2 | All MCs | 27 | 7.7 | 27 | 7.7 | 0.143 | 7.0 | LOS A | 0.3 | 1.8 | 0.12 | 0.13 | 0.12 | 56.0 |
| Approach | | | 276 | 2.3 | 276 | 2.3 | 0.143 | 0.9 | NA | 0.3 | 1.8 | 0.12 | 0.13 | 0.12 | 58.7 |
| All Vehicles | | | 793 | 1.7 | 793 | 1.7 | 0.267 | 4.0 | NA | 1.0 | 7.3 | 0.16 | 0.37 | 0.17 | 55.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

## Site: 101 [Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2026 - AM Peak (Site Folder: Existing Layout - KS)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Abundance Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 65 | 0.0 | 65 | 0.0 | 0.464 | 11.0 | LOS A | 2.5 | 17.7 | 0.66 | 1.07 | 0.97 | 47.3 |
| 3 | R2 | All MCs | 196 | 3.2 | 196 | 3.2 | 0.464 | 16.5 | LOS B | 2.5 | 17.7 | 0.66 | 1.07 | 0.97 | 47.1 |
| Approach | | | 261 | 2.4 | 261 | 2.4 | 0.464 | 15.1 | LOS B | 2.5 | 17.7 | 0.66 | 1.07 | 0.97 | 47.2 |
| East: Ferodale Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 304 | 2.8 | 304 | 2.8 | 0.287 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 54.8 |
| 5 | T1 | All MCs | 275 | 1.1 | 275 | 1.1 | 0.287 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 57.1 |
| Approach | | | 579 | 2.0 | 579 | 2.0 | 0.287 | 3.0 | NA | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 55.9 |
| West: Ferodale Road | | | | | | | | | | | | | | | |
| 11 | T1 | All MCs | 209 | 2.0 | 209 | 2.0 | 0.195 | 0.0 | LOS A | 0.9 | 6.6 | 0.41 | 0.46 | 0.41 | 56.6 |
| 12 | R2 | All MCs | 86 | 3.7 | 86 | 3.7 | 0.195 | 12.5 | LOS A | 0.9 | 6.6 | 0.41 | 0.46 | 0.41 | 54.1 |
| Approach | | | 296 | 2.5 | 296 | 2.5 | 0.195 | 3.6 | NA | 0.9 | 6.6 | 0.41 | 0.46 | 0.41 | 55.9 |
| All Vehicles | | | 1136 | 2.2 | 1136 | 2.2 | 0.464 | 6.0 | NA | 2.5 | 17.7 | 0.26 | 0.52 | 0.33 | 53.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

## Site: 101 [Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2026 - PM Peak (Site Folder: Existing Layout - KS)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Abundance Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 44 | 2.4 | 44 | 2.4 | 0.450 | 10.5 | LOS A | 2.4 | 17.0 | 0.64 | 1.04 | 0.91 | 47.7 |
| 3 | R2 | All MCs | 224 | 0.0 | 224 | 0.0 | 0.450 | 15.0 | LOS B | 2.4 | 17.0 | 0.64 | 1.04 | 0.91 | 47.7 |
| Approach | | | 268 | 0.4 | 268 | 0.4 | 0.450 | 14.3 | LOS A | 2.4 | 17.0 | 0.64 | 1.04 | 0.91 | 47.7 |
| East: Ferodale Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 227 | 2.8 | 227 | 2.8 | 0.212 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 54.8 |
| 5 | T1 | All MCs | 202 | 0.0 | 202 | 0.0 | 0.212 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 57.2 |
| Approach | | | 429 | 1.5 | 429 | 1.5 | 0.212 | 3.0 | NA | 0.0 | 0.0 | 0.00 | 0.31 | 0.00 | 55.9 |
| West: Ferodale Road | | | | | | | | | | | | | | | |
| 11 | T1 | All MCs | 283 | 1.5 | 283 | 1.5 | 0.207 | 0.0 | LOS A | 0.8 | 5.4 | 0.28 | 0.31 | 0.28 | 57.7 |
| 12 | R2 | All MCs | 80 | 2.6 | 80 | 2.6 | 0.207 | 10.1 | LOS A | 0.8 | 5.4 | 0.28 | 0.31 | 0.28 | 55.1 |
| Approach | | | 363 | 1.7 | 363 | 1.7 | 0.207 | 2.2 | NA | 0.8 | 5.4 | 0.28 | 0.31 | 0.28 | 57.1 |
| All Vehicles | | | 1061 | 1.3 | 1061 | 1.3 | 0.450 | 5.6 | NA | 2.4 | 17.0 | 0.26 | 0.50 | 0.33 | 53.9 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

## Site: 101 [Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2036 - AM Peak (Site Folder: Existing Layout - KS)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Abundance Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 71 | 0.0 | 71 | 0.0 | 0.684 | 14.9 | LOS B | 4.5 | 32.2 | 0.81 | 1.26 | 1.65 | 43.8 |
| 3 | R2 | All MCs | 231 | 3.7 | 231 | 3.7 | 0.684 | 23.8 | LOS B | 4.5 | 32.2 | 0.81 | 1.26 | 1.65 | 43.6 |
| Approach | | | 301 | 2.8 | 301 | 2.8 | 0.684 | 21.7 | LOS B | 4.5 | 32.2 | 0.81 | 1.26 | 1.65 | 43.6 |
| East: Ferodale Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 359 | 3.2 | 359 | 3.2 | 0.348 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 54.8 |
| 5 | T1 | All MCs | 341 | 1.2 | 341 | 1.2 | 0.348 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 57.2 |
| Approach | | | 700 | 2.3 | 700 | 2.3 | 0.348 | 3.0 | NA | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 55.9 |
| West: Ferodale Road | | | | | | | | | | | | | | | |
| 11 | T1 | All MCs | 265 | 2.4 | 265 | 2.4 | 0.252 | 0.0 | LOS A | 1.2 | 8.9 | 0.43 | 0.50 | 0.43 | 56.1 |
| 12 | R2 | All MCs | 93 | 4.5 | 93 | 4.5 | 0.252 | 16.3 | LOS B | 1.2 | 8.9 | 0.43 | 0.50 | 0.43 | 53.6 |
| Approach | | | 358 | 2.9 | 358 | 2.9 | 0.252 | 4.2 | NA | 1.2 | 8.9 | 0.43 | 0.50 | 0.43 | 55.4 |
| All Vehicles | | | 1359 | 2.6 | 1359 | 2.6 | 0.684 | 7.4 | NA | 4.5 | 32.2 | 0.29 | 0.57 | 0.48 | 52.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

## Site: 101 [Ferodale Rd / Abundance Rd - Stage 1 - PostDev 2036 - PM Peak (Site Folder: Existing Layout - KS)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Abundance Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 46 | 2.3 | 46 | 2.3 | 0.658 | 13.6 | LOS A | 4.4 | 30.8 | 0.78 | 1.22 | 1.52 | 44.6 |
| 3 | R2 | All MCs | 271 | 0.0 | 271 | 0.0 | 0.658 | 20.8 | LOS B | 4.4 | 30.8 | 0.78 | 1.22 | 1.52 | 44.6 |
| Approach | | | 317 | 0.3 | 317 | 0.3 | 0.658 | 19.8 | LOS B | 4.4 | 30.8 | 0.78 | 1.22 | 1.52 | 44.6 |
| East: Ferodale Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 268 | 3.1 | 268 | 3.1 | 0.259 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 54.8 |
| 5 | T1 | All MCs | 255 | 0.0 | 255 | 0.0 | 0.259 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 57.2 |
| Approach | | | 523 | 1.6 | 523 | 1.6 | 0.259 | 2.9 | NA | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 56.0 |
| West: Ferodale Road | | | | | | | | | | | | | | | |
| 11 | T1 | All MCs | 353 | 1.8 | 353 | 1.8 | 0.259 | 0.0 | LOS A | 1.0 | 7.0 | 0.30 | 0.34 | 0.30 | 57.7 |
| 12 | R2 | All MCs | 88 | 3.6 | 88 | 3.6 | 0.259 | 12.3 | LOS A | 1.0 | 7.0 | 0.30 | 0.34 | 0.30 | 55.0 |
| Approach | | | 441 | 2.1 | 441 | 2.1 | 0.259 | 2.5 | NA | 1.0 | 7.0 | 0.30 | 0.34 | 0.30 | 57.1 |
| All Vehicles | | | 1281 | 1.5 | 1281 | 1.5 | 0.658 | 6.9 | NA | 4.4 | 30.8 | 0.29 | 0.54 | 0.48 | 53.0 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# Appendix D

School travel plan

Department of Education

# New High School for Medowie

## School Transport Plan

wsp

Question today
*Imagine tomorrow*
Create for the future

# Medowie High School
# School Transport Plan

Department of Education

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| Rev | Date | Details |
|---|---|---|
| | 15/11/2024 | Draft submission |
| A | 21/01/2025 | Updated School Travel Plan in response to the previous comments |
| B | 31/01/2025 | Final submission |

| | Name | Date | Signature |
|---|---|---|---|
| Prepared by: | Hayley Cavanagh | 31/01/2025 | |
| Reviewed by: | Tom Van Drempt | 31/01/2025 | |
| Approved by: | Tom Van Drempt | 31/01/2025 | |

WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.



PS211246-PAM-REP-003_RevB_Medowie High School Transport Plan.docx

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# 1 Introduction

This Transport and Accessibility Impact Assessment (TAIA) has been prepared to support a Review of Environmental Factors (REF) for the proposed New High School for Medowie (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

The activity will be carried out at 6 Abundance Street, Medowie (the site). The purpose of this report is to provide an overview of the proposed school operation arrangements as well as an approach towards increasing sustainable travel to and from school.

## 1.1 Project context

The New High School for Medowie will be located in the township of Medowie, within the Greater Hunter region and Port Stephens council area, an approximately 40-minute drive north of Newcastle. According to the Hunter Regional Plan 2041 (NSW Government, 2022), the region is envisioned to be a leading regional economy with significant population and housing growth by 2041. The population of Medowie is also projected to increase to 15,000 by 2040 (current population of 10,879, Australian Bureau of Statistics 2021), as more people and businesses move to the area (Medowie Place Plan, Port Stephens Council, 2023). The proposed Medowie High School will support this growth, providing educational facilities for current and future residents who would otherwise be required to travel further south to access secondary education, such as in Raymond Terrace or Newcastle.

A Rapid Transport Assessment (RTA) was previously developed by the Department of Education (DoE)and WSP, providing a high-level assessment of the proposed activity with regards to active and public transport connectivity. Building from the recommendations provided in the RTA, the design for the proposed Medowie High School has been further refined. A Transport Working Group (TWG) has been established to facilitate collaboration across Port Stephens Council, Transport for NSW (TfNSW), DoE and the project team to ensure the successful planning and delivery of the activity. The TWG meetings explored access arrangements and impacts to the local road network to minimise the potential impacts on the road environment and transport network. Furthermore, The TWG has agreed on the approach towards the traffic modelling and assessment reported on in this report.

## 1.2 Report Objectives

The purpose of this report is to outline the proposed transport operations for the new Medowie High School, as well as an approach to encouraging a mode shift to sustainable travel modes (public transport, walking and cycling), for travel to and from the school site.

Specifically, this report has the following objectives:

- **Detail the school transport operations plan**, covering site access, operating hours, and transport logistics (including kiss and ride, bus bay, and service vehicles).
- Present a feasible strategy to achieve the **sustainable travel mode share targets**.
- Develop a **Communications Plan** and establish methods for **data collection and monitoring** to support ongoing school operations.

## 1.3 Structure of the Report

- **Section 1 Introduction:** Describes the context of Medowie High School within the broader region and outlines the objectives of this report.
- **Section 2 Key findings from the TAIA:** Provides a summary of the key findings from the existing conditions assessment undertaken in the Transport and Access Impact Assessment.
- **Section 3 Proposed school site:** Outlines the proposal, highlighting key details including student and staff numbers, parking provision and access arrangements.
- **Section 4 Guiding policy and mode share targets:** Outlines the policies underpinning the School Travel plan and the proposed scenario mode share targets. An approach towards demand management for each scenario is also provided in this section.
- **Section 5 School travel plan:** Outlines the proposed implementation plan and communications strategy to support the initiatives and actions undertaken at the school, to encourage the use of sustainable travel modes.
- **Section 6 School transport operations:** Outlines the proposed transport operations for the school access and parking arrangements.
- **Section 7 Governance Framework:** Outlines the government framework for supporting the implementation plan and activities at the school
- **Section 8 Monitoring and evaluation:** Outlines the proposed approach to data collection, program evaluation and ongoing management of school transport operations.
- **Section 9 Mitigation measures:** Identifies the various mitigation measures that will support the school transport operations.
- **Section 10 Conclusions:** Summarises the key findings from the assessment.

# 2 Key findings from the TAIA

The location of the proposed new school site is depicted below in Figure 2.1.


Figure 2.1 Existing Site Context

As outlined in Section 1, a detailed Transport and Access Impact Assessment has been developed for the new Medowie High School. This report assesses the existing conditions and outlines recommendations to minimise the impact of the new school site. The key findings from this report are summarised below.

Table 2.1 Summary of the findings from the existing conditions assessment

| | Existing conditions and recommendations |
|---|---|
| **Road network** | **Conditions**<br>— Key access roads to the school are Ferodale Road (east-west running) and Abundance Road (north-south running)<br>— Key intersection of Ferodale and Abundance Road is currently stop-controlled and whilst the Port Stephens Council proposes this intersection to be upgraded to a roundabout within the Medowie Planning Strategy (Port Stephens Council, 2016), the Transport and Access Impact Assessment concludes that no upgrade is required to support the new high school |
| **Active transport** | **Conditions**<br>— Footpath along the northern side of Ferodale road supports pedestrian access to the new school site<br>— Children's crossing on Ferodale Road opposite Medowie Public School and refuge's along Ferodale Road towards Medowie town centre support student access to the school |

| | |
|---|---|
| | — No footpaths are currently provided along Abundance Road or the new school frontage<br>— Cycling infrastructure is limited within the new school site locality, however students under the age of 16 are permitted to ride on footpaths<br>**Recommendations**<br>— Recommend new shared paths along the school frontage on Abundance Road, which has been provided in the proposed design for the new school<br>— Recommend providing a raised pedestrian crossing at the school entry, which is proposed in the design on Abundance Road<br>— Implement education and behaviour change programs to encourage students to walk and cycle to school, as outlined in this School Transport Plan |
| **Public transport** | **Conditions**<br>— Several public and school bus services operate at bus stops within walking distance of the new school site<br>**Recommendations**<br>— The existing public transport services are likely acceptable for supporting the new school site; however, recommendations have been made to monitor the demand on public transport services (monitoring and evaluation specifications outlined in Section 0)<br>— Whilst there are no endorsed plans by TfNSW to update the public transport services in the local area, future consideration to providing a dedicated shuttle or increasing the frequency of public and school buses will improve the public transport service offering for both students and residents |
| **Catchment analysis** | **Conditions**<br>— Less than 4 per cent of the forecast enrolments are within the 15-minute walking catchment of the new school site<br>— Over 65 per cent of the forecast enrolments have accessible cycling routes (on footpaths or on the road) within a 10-15 minute distance of the new school site<br>— Over 16 per cent (approximately 44 per cent of students located outside of the SSTS Exclusion Zone) do not live within a walkable distance to public transport services to the high school site. These students will likely comprise the group of students who drive or are driven to school<br>— Currently, walking, cycling, and public transport routes are somewhat indirect, with a significant 10 percent difference between the notional and actual accessibility for a 400-meter walking distance to a public transport stops |
| **Road safety** | **Conditions**<br>— Relatively low number of collisions occurred within the vicinity of the new school site, however majority of collisions (67 per cent) resulted in an injury<br>— Only one collision occurred between a vehicle and a cyclist and no collisions involved a pedestrian<br>— Several collisions, including a recent fatality, occurred from vehicles entering the roadway from an adjacent driveway colliding with another vehicle<br>**Recommendations**<br>— The extension of the school zone for the new Medowie High School is likely to improve road safety, particularly during the busy pick-up and drop-off periods<br>— Traffic calming measures along the local road network (e.g. zebra crossings, speed humps, signage etc) will support a safer traffic environment for both students travelling to the new school and residents |
| **Parking availability** | **Conditions**<br>— There are approximately 385 unrestricted and 42 restricted on-street parking spaces provided along Ferodale Road and Abundance Road within proximity to the new school site. Approximately 55 unrestricted on-street spaces are provided along the school frontage on Abundance Road |

| | |
|---|---|
| | **Recommendations**<br>— This provision can accommodate visitors to the site, with the following measures in place to reduce the strain on the on-street parking:<br>  — Developing the Travel Access Guide (TAG) to encourage students to use sustainable modes for travel to and from school<br>  — Staggering school bell times with Medowie Public School (AM and PM bell times 8:55 AM and 2:50 PM respectively) to minimise short-term on-street parking demand<br>  — Implementing the various behaviour change programs set out in this School Transport Plan |
| **Traffic assessment** | **Conditions**<br>— Existing performance at the intersection of Ferodale Road and Abundance Road is good, experiencing Level of Service (LoS) A, with the maximum 95$^{th}$ percentile queue occurring on Abundance Road at 7.3 metres (just over one cars length)<br>— The performance of this intersection with the inclusion of the proposed school site (assessed for 2026 and 2036 background traffic growth) remains satisfactory, operating at LoS A and B at the approaches<br>**Recommendations**<br>— An intersection upgrade is not required to support the new school site, however the Port Stephens Council's plan to upgrade the intersection to a roundabout as part of the Medowie Planning Strategy to 2036 (Port Stephens Council, 2016), will support the anticipated growth in residents in the future<br>— Staggering the school bell times with Medowie Public School will minimise the peak traffic demand<br>— Ongoing monitoring of the traffic conditions will support the continuing management of local traffic conditions (monitoring and evaluation plan outlined in Section 8) |

*Source: Medowie High School Transport and Accessibility Impact Assessment, 2024*

## 2.1 Traffic Impacts and Mitigation Measures

A traffic impact assessment has been conducted to evaluate the potential future impacts of the proposed high school site (refer to the *Medowie High School Traffic Impact Assessment, 2024*). The findings indicate that the neighbouring intersection of Ferodale and Abundance Road will not require upgrade to support the additional traffic generation from the new school site. With the new school, the Level of Service (LoS) for each approach will remain satisfactory, ranging from Level of Service A to B, with minimal delays and queuing.

Adopting staggered school bell times with Medowie Public School can be implemented to alleviate peak traffic demand and improve safety. Typically, 15 to 20 minute staggering is sufficient to achieve these outcomes.

# 3 Proposed activity

## 3.1 Overview

The proposed activity involves the construction of school facilities on the site for the purpose of the New High School for Medowie. The site contains a densely vegetated area to the southwest corner which is identified as land with high biodiversity values corresponding to the areas of remnant native vegetation (PCT 3995 – Hunter Coast Paperbark-Swamp Mahogany Forest). The existing dwelling house and other structures on the site will be demolished as part of the works. No other works are proposed within this area.

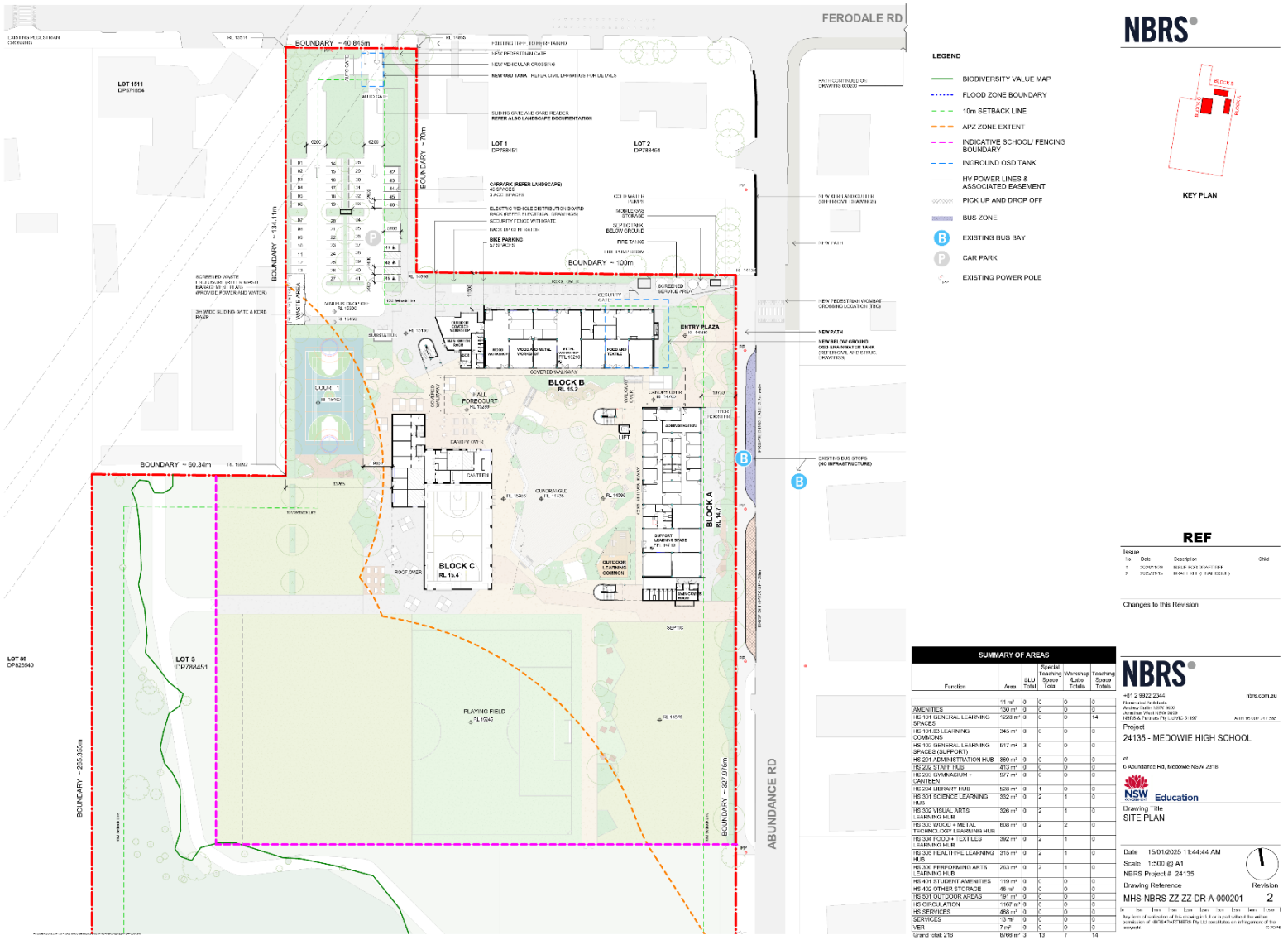
The proposed new school will accommodate 640 students in 29 permanent teaching spaces including 3 support teaching spaces across 3-storeys of buildings on the site. The proposed activity be delivered across 1 stage, and will consist of the following:

**29 permanent teaching spaces including 3 support teaching spaces, to accommodate 640 students, and school hall . Approximately 10,500 sqm of GFA is proposed.**

- Main vehicular ingress and egress to Ferodale Road to the north, with a new pedestrian and vehicle crossing proposed.
- Main pedestrian access to Abundance Road.
- Kiss and ride, and bus drop and pick up areas to Abundance Road (5 x parallel spaces).
- New pedestrian wombat crossing to Abundance Road
- 46 x car parking spaces and 3 x accessible car parking spaces.
- 57 x bicycle parking spaces.
- Block A (Admin) consisting of administration and learning spaces.
- Block B (Foodtech/Workshop) consisting of food technology rooms and workshops.
- Block C (Hall) consisting of school hall to accommodate 1,000 students.
- Central quad, 1 playing field, and 1 sports courtyard.

The proposed school development will include the following spaces; general learning spaces, General support learning spaces, administrative services, staff areas, gym and canteen, library areas for science, wood and metal, food and textiles, health PE, performing arts, additional learning spaces, student amenities, storage, movement (stairs and covered walkways).

A detailed outline and assessment of the proposed access arrangements and design is provided in the *Medowie High School Transport and Access Impact Assessment.*




*Source: NBRS, 2024*

Figure 3.1 New Medowie High School proposed site

# 4 Guiding policy

## 4.1 Transport objectives and guiding policy

The new Medowie High School aims to prioritise sustainable transport modes to and from school (walking, cycling and public transport) first and foremost. TfNSW's movement hierarchy in their Road User Space Allocation Policy (2021), sets the tone for prioritising active transport above all other modes.


*Source: TfNSW, 2021*

Figure 4.1 TfNSW's Road User Space Allocation Policy

The new Medowie High School aims to achieve this active and public transport prioritisation by improving access in the proposed design as well as the following measures:

- Mode share targets and scenarios that promote a shift to sustainable travel modes
- Implementing on-going educational and behaviour change programs that encourage students to walk and cycle to school.

## 4.2 Mode share scenarios

Three mode share scenarios have been explored for the Medowie High School site, as summarised below:

- The **'Baseline Scenario'** for travel to Medowie High School represents typical student mode splits in NSW, with a higher level of public transport use (70 per cent), followed by private vehicles (23 per cent) and active transport modes (7 per cent). The targets for the baseline scenario have been informed by travel surveys undertaken by the Department of Education for the adjacent existing schools of Hunter River and Irrawang, which share similar demographics and travel behaviours, as no travel surveys were available for this new high school.

  It is anticipated that the Baseline Scenario will be achieved from day one (no behavioural change required to support this scenario).

- The **'Medium Scenario'** reflects a moderate increase in sustainable transport modes compared with the baseline scenario. In this scenario active travel mode share will increase to 17 per cent (10 per cent walking and 7 per cent cycling), public transport mode share will increase to 70 per cent and private vehicle use will decrease to 13 per cent (10 per cent decrease).

  To encourage an increase in active transport and reduction in car use, this scenario will require students and staff members to actively change the way they would typically travel to school. This will be supported through the application of the implementation plan (see Section 5.1), with particular focus on the 'general', 'walking and cycling' and 'reducing car use' measures. Ongoing monitoring and evaluation (see Section 0) will help ensure that the mode share targets are achieved in this scenario.

- The **'Reach Scenario'** represents the aspirational mode splits for Medowie High School, specifying an increase in active transport to 20 per cent, increase in public transport to 75 per cent and a decrease in private vehicle mode share to 5 per cent of the student population.

  This scenario will require more significant behavioural change, supported through the application of the implementation plan (Section 5.1) with a focus on all items covered in the plan. Ongoing monitoring and evaluation (see Section 0) will help ensure that the mode share targets are achieved in this scenario.

Table 4.1 Scenario student travel mode share

| Mode | Scenario 1 – Baseline | | Scenario 2 – Medium (Moderate) | | Scenario 3 – Reach (Best Case) | |
|---|---|---|---|---|---|---|
| | Percentage of students | Number of students | Percentage of students | Number of students | Percentage of students | Number of students |
| Walk | 5% | 32 | 10% | 64 | 10% | 64 |
| Bicycle | 2% | 13 | 7% | 45 | 10% | 64 |
| Public transport | 70% | 448 | 70% | 448 | 75% | 480 |
| Private vehicle | 23% | 147 | 13% | 83 | 5% | 32 |
| **Total** | **100%** | **640** | **100%** | **640** | **100%** | **640** |

## 4.3 Scenario demand management

The management of demand for each mode will vary across each scenario and it is important to consider the infrastructure, operations and behaviour change measures that may be required for each. Table 4.2 summarises the different infrastructure, operations and behaviour change programs that may be required to support the target mode share for each scenario at the school site.

Table 4.2 Summary of infrastructure, operations and behaviour change required across all three scenarios (Baseline, Medium and Reach)

| Considerations | | Baseline Scenario | Medium Scenario | Reach Scenario |
|---|---|---|---|---|
| Active travel | Walking Infrastructure | Type 3 footpaths recommended for the site boundaries as per the Transport for NSW Walking Space Guide (2020), which allows for 70 – 400 pedestrians per hour. Type 3 footpaths typically provide 3 metre widths, allowing for travel in pairs, and passing. This will support the students walking, cycling and catching public transport to school across all three scenarios. | | |
| | Cycling Infrastructure | Proposed provision of 57 bicycle parking spaces supports both the anticipated cycling demand for the 'Baseline' and 'Medium' mode share scenarios. | | Proposed provision of 57 bicycle parking spaces does not support the 'Reach Scenario' (10 per cent cycling demand).<br>Additional bicycle parking facilities will need to be provided to support the active travel demand for this scenario. Specifically, at least 69 bicycle parking spaces will be needed in this scenario. |
| | Operations | It is important that staff members actively monitor the proposed raised pedestrian crossing on Abundance Road and other pedestrian access points to the school, to ensure the safety of students.<br>No behavioural change assumed to be required for the baseline scenario. | It is important that staff members actively monitor the proposed raised pedestrian crossing on Abundance Road and other pedestrian access points to the school, to ensure the safety of students.<br>Some investment in behavioural change programs required to support a moderate mode shift from private vehicle use to walking and cycling. | It is important that staff members actively monitor the proposed raised pedestrian crossing on Abundance Road and other pedestrian access points to the school, to ensure the safety of students.<br>A larger investment in behavioural change programs required to support a more significant mode shift from private vehicle use to walking and cycling. |

| Considerations | | Baseline Scenario | Medium Scenario | Reach Scenario |
|---|---|---|---|---|
| Public transport | Infrastructure | In the baseline and medium scenarios, the demand for public transport will be approximately 448 students, 70 per cent of the student population.<br><br>This will require up to 15 buses per hour (as per the State Transit Bus Infrastructure Guide), compliant for buses 12.5 metres in length (please see the *Medowie High School Traffic Impact Assessment* for a guide to these calculations). | | In the reach scenario, the demand for public transport will be approximately 480 students, 75 per cent of the student population.<br><br>This will require up to 16 buses per hour (as per the State Transit Bus Infrastructure Guide), compliant for two buses 12.5 metres in length (please see the *Medowie High School Traffic Impact Assessment* for a guide to these calculations).<br><br>This reflects an increase in the proposed provision by approximately 1 bus bay and would require a review of the proposed bus bay provision as well as increases in service provision or changes to the network. Whilst there are currently no endorsed plans by TfNSW for updating the public transport services in the local area, this may need to be considered to meet the 'Reach Scenario' public transport mode share. Potential public transport service enhancements have been outlined in the Transport and Access Impact Assessment. To support, additional locations for providing additional bus bays / holding bus bays may need to be considered in the future to support the additional demand.<br><br>Note that the calculation of the required bus infrastructure under the 'Reach Scenario' assumes average bus occupancy of 50 per cent (refer to Transport and Access Impact Assessment), which could be increased in the future to support the additional demand. |
| | Operations | Bus bay operations outlined in Section 6.1.5 to be adhered to. | | Adhere to the typical bus bay operations outlined in Section 6.1.5. |

| Considerations | | Baseline Scenario | Medium Scenario | Reach Scenario |
|---|---|---|---|---|
| Private vehicles | Infrastructure | In the baseline scenario it is anticipated that 147 students will be driven to school.<br>To meet this demand 7 kiss and ride bays are recommended to be provided at the school. | In the medium scenario it is anticipated that 83 students will be driven to school.<br>There is an opportunity to reclaim a small amount of kerb space in this scenario, as the kiss and ride provision will potentially be able to reduce minorly to satisfy the reduced demand. | In the reach scenario it is anticipated that 32 students will be driven to school.<br>There is a further opportunity to reclaim some kerb space in this scenario, with further reductions in demand for driving and kiss and ride. There may be an opportunity to claim further kerb-space from the reduced kiss and ride demand to support the increased bus bay demand. |
| | Operations | Kiss and ride operations should be undertaken in accordance with the operations outlined in Section 6.1.4. Continuous monitoring of operations is crucial to minimising delays and congestion at the kiss-and-ride bays. | | |

# 5 School travel plan

## 5.1 Implementation plan

The following actions have been identified as part of the School Travel Plan to help the school in achieving the mode share targets. These identified strategies include the promotion of events and activities to support these targets. Whilst these activities will not significantly alter the way students and staff members travel to and from school, they can support a gradual shift to sustainable modes as well as improved awareness of safety measures for walking and cycling to school.

Table 5.1 Implementation plan measures for the new Medowie High School

| No. | Action / Description | Responsibility | Response |
|---|---|---|---|
| **1. General** | | | |
| **1.1** | **Establish a centralised Travel Plan Coordinator (TPC)** who is to take responsibility for the ongoing review and monitoring of this Plan. This person(s) shall also provide direction to staff / parents in relation to specific requirements arising from the Plan. The TPC will facilitate ongoing engagement with the School Working Group (SWG) and the Transport Working Group (TWG). | School | A TPC is to be nominated by the DoE / School to support the ongoing implementation of the School Travel Plan. |
| **1.2** | **Provide a 'Travel Welcome Pack'** for newly employed staff, highlighting alternate modes of transport other than the use of a private vehicle. | TPC / School | Travel Welcome Pack to be prepared and provided to all staff members before the start of Term. |
| **1.3** | **Ongoing review of the School Transport Plan** as a regular item on the agenda of staff / management meetings. | School | School responsible for undertaking regularly / periodically. |
| **1.4** | **Preparation of a Transport Access Guide (TAG)** to be provided to staff, students and parents as part of the start of Term materials provided each year.<br>The TAG will outline the access arrangements, public and active transport services and infrastructure, parking arrangements and other key travel details that will inform the way students travel to school. | TPC | The TAG is to be provided to all staff, students and parents at the beginning of the school term each year. However, it is recommended that this is updated and reissued to support any changes to bus routes and service time occur. |
| **2. Walking and Cycling** | | | |
| **2.1** | **Ride2 Work and Ride2School Day,** which provides staff, students and parents and opportunity to participate in the annual event. This day features competitions and awards for students and will help introduce cycling into students' travel routines and demonstrate that it is a viable way to travel to school. | School / TPC | TPC and school to collaborate to develop messaging to the school community (newsletters, calendar reminders, daily announcements etc) to promote this annual activity and encourage participation. |

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| **2.2** | **Walk Safely to School Day** is another annual event that schools can participate in, which encourages students to walk safely to school. This coincides with Walk to Work Day, which staff members can also participate in. | School / TPC | TPC and school to collaborate in the planning for and marketing to the school community to inform them of this initiative (newsletters, calendar reminders, daily announcements etc). |
| **2.3** | **Additional Health Events** There are a range of different events that schools can participate in, to encourage safe sustainable travel to school. These include Bike Week and Health and Wellness Fairs. Hosting these events helps inform and encourage staff and students to adopt active modes for travel to and from school. | School / TPC | TPC and school to collaborate in the planning for and marketing to the school community to inform them of the selected events (newsletters, calendar reminders, daily announcements etc). |
| **2.4** | **Provide and maintain safe active transport facilities** and access arrangements for travel to and from the school. | School / Department of Education | The Transport and Access Impact Assessment has recommended the provision of safe access facilities and arrangements for walking and cycling to and from the new school. It is the responsibility of the School and the Department of Education to monitor the feasibility and quality of these access facilities, providing routine maintenance and upgrades where necessary. |
| **2.5** | **Provide sufficient and secure bicycle parking facilities** to support the mode share targets and undertake routine maintenance. | School | The proposed bike parking provision has been deemed sufficient to support the anticipated student enrolment. It is the school's responsibility to upgrade this provision as student enrolment increases and to ensure ongoing maintenance of these facilities. |
| **3. Education programs** | | | |
| **3.1** | **Adapting the curriculum to inform students on road safety awareness.** Improving upon the existing student curriculum to educate students on Road Awareness, particularly when it comes to walking or riding independently to school. Liaise with the Road Safety Education page within the NSW Department of Education, to inform any updates to the curriculum. | School / TPC | The TPC and the school will review the Road Safety Education information from the NSW Department of Education to identify necessary updates to the school curriculum for educating students on road safety. It is anticipated that this curriculum will vary between year groups and should be tailored accordingly. |
| **4. Public Transport** | | | |
| **4.1** | Provide students with information about public transport routes and timetables e.g. displays around the school and through the TAG. | School / TPC | Prepare the TAG to inform students of the public transport routes for travelling to and from the school.<br>Ongoing updates the School Transport Plan and TAG to reflect any changes to the public transport network. |

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| **4.2** | Collaborate with TfNSW to improve public transport services to respond to increased development (e.g. residences) in the surrounding area as well as supporting the 'Reach' mode share scenario which will see an increase in public transport demand by approximately 32 students. | TPC / Schools Infrastructure NSW | The TPC and Schools Infrastructure NSW should consult with TfNSW in the case that local development or improvements to public transport mode share for travel to and from the school, renders the existing public transport provision insufficient to support the demand. |
| **4.3** | Undertake a review of any benefits (e.g. tax incentives for Government employees) that will support staff members using public transport. | School / TPC | The TPC and school are responsible for undertaking a review and informing staff members of the benefits they are entitled to. This could be communicated through newsletters, regular meetings and bulletin boards (up to the school's discretion). |
| **4.4** | Develop incentive programs for encouraging students to use public transport to travel to and from school e.g. rewards schemes | School / TPC | The TPC and school are responsible for identifying and implementing appropriate incentive programs for public transport travel to and from school. |
| **4.5** | **Participating in initiatives such as Bus Safety Week**, which aims to raise awareness for all road users on the safety rules when walking, riding or driving near buses. | School / TPC | The TPC and school are responsible for collaborating on and planning for public transport initiatives at the school. |
| **5.0 Reducing Car Use** | | | |
| **5.1** | Implement on-street parking restrictions around the school. This can be used to discourage students driving to and parking at school. | TPC / Port Stephens Council | TPC to collaborate with the council's Road Safety Officer to determine any additional parking restrictions that might be required. |
| **5.1** | Develop a parking management scheme to discourage single-occupancy trips for staff members driving to and from the school. | School / TPC | Consider this measure if parking management for the on-site carpark becomes unnecessary. |
| **5.3** | Car-pooling incentives for parents and staff driving to school. | TPC | The TPC and school are responsible for identifying and implementing appropriate incentive programs for encouraging car-pooling. |

## 5.2 Communications strategy

To effectively implement the actions identified in the Implementation Plan, the following Communications Strategy has been developed. This Strategy outlines the role of the Travel Plan Coordinator (TPC) in relaying the information outlined in the implementation plan to the student body, parents and staff members.

Table 5.2 Communications strategy for the new Medowie High School

| Description | Communication method | Responsibility |
|---|---|---|
| Providing key travel information (e.g. public transport routes, walking and | — Welcome packs at the start of the school year and for new staff and students to the school | TPC |

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| cycling access points etc) to staff, students and parents. This includes the TAG and other documents that outline the benefit of sustainable transport modes and specify the options available to the school community. | — School website<br>— On school bulletin boards and during morning announcements where necessary | |
| Updating staff, students and parents on the planned initiatives outlined in the Implementation Plan e.g. Ride-To-School Day, Walk-To-School-Day etc. This should take place in the lead up to the events. | — School website<br>— E-newsletters<br>— On school bulletin boards and during morning announcements<br>— Social media | TPC |
| Providing information on the availability of student bus passes. | — Welcome packs at the start of the school year and for new staff and students to the school<br>— School website | TPC |
| Key information on school operations e.g. kiss and ride, access and parking arrangements, road safety and school zone operations.<br>Keep the school community up to date on any changes to operations as well as any external factors that might impact operations e.g. local construction activities. | — Welcome packs at the start of the school year and for new staff and students to the school<br>— School website<br>— E-newsletters<br>— Social media | TPC |

The 'Welcome packs' outlined in the communications strategy should be provided to new staff and students that join the school. This information should be provided as part of the on-site induction to the school. This welcome pack should include general information about the school, access arrangements, parking and operations etc as well as information about the school's sustainability targets, the TAG and an overview of the initiatives that are planned to occur throughout the school year.

# 6 School transport operations

## 6.1 Access Management Plan

Medowie High School is committed to managing pedestrian and vehicle movements both on-site and within the local road network. This coordination aims to meet operational requirements while ensuring student safety and maintaining on-street efficiency.

### *6.1.1 Key Responsibilities*

It is the responsibility of the school to ensure that the following items are actioned:

- Provide comprehensive training to all staff to ensure they can perform their travel management roles (e.g. supervising kiss-and-ride operations, leading education programs or school initiatives) effectively. This includes making sure that staff, parents/carers, visitors, and students are well-acquainted with site-specific operations (outlined in the Communications strategy Section 5.2).
- Understand and fulfill their duty of care obligations as per the relevant state Work Health and Safety legislation.
- Maintain WHS incident logbooks and take appropriate actions to address any reported issues.

### *6.1.2 School Operating Hours*

Medowie High School will be accessible to students, staff and members of the public from approximately 7:00 AM to 6:00 PM on weekdays (to be confirmed after the principal has been appointed). Access outside these operating hours will be restricted. The school bell times will also be confirmed once the principal has been appointed, however it has been recommended that these are staggered (by 20 minutes) with Medowie Public School. Medowie Public School's bells currently occur at 8:55 AM and 2:50 PM, for the start and finish times respectively.

### *6.1.3 Site Access*

As outlined in Section 3, students, staff and visitors to the school will be able to access the site from two main pedestrian access points, one on Ferodale Road and the other on Abundance Road. For staff accessing the on-site carpark, a boom gate will control access. The intercom, gate control panel and video monitor will be located and controlled from the administration office or an alternate central location. Key cards will be provided to staff members and those who have permitted access to the car park (such as parents of students requiring access to the DDA accessible parking spaces), however others such as visitors will be required to use the intercom to be granted access to the site. In addition, it is typical that visitors attending the school will be required to make appointments in advanced, whereby the school can inform the visitors on the travel mode choices including that the on-site carpark is dedicated for staff members only.

### *6.1.4 Kiss and ride operations*

The kiss and ride bay on Abundance Road will provide space for approximately 5 cars. This bay will be signposted as "kiss and ride area" between the hours of 8:00 AM – 9:30 AM and 2:30 – 4:00 PM for drop-off and pick-up respectively (consistent with NSW school zone operating hours). This will allow the kiss and ride bay to operate as a no parking zone, only allowing parents to dwell in the bay for a maximum of two minutes. It is important that members of staff monitor the kiss and ride operations both in the morning and afternoon operations, to actively minimise any risks of conflicts or delays. This includes enforcing the maximum bay dwell time of 2 minutes where necessary, to ensure the efficient operations of the bays.

As outlined in the TAIA, the access route to the kiss and ride for parents and students travelling from the north and east of the site, requires travel around the block of Ferodale Road, Fairlands Road, Lisadell Road and Abundance Road (refer

Figure 6.1). It is important that parents and students are informed of this access route before the school year, via the TAG outlined in the Implementation Plan.


Figure 6.1 Proposed kiss & ride access arrangements

### 6.1.5 Bus bay operations

As outlined in Section 3.1, the bus bay is to be provided on Abundance Road, just north of the kiss and ride bay, facilitating a maximum of one bus at any time. This bus bay will be operational during school morning and afternoon peak periods to allow students to travel to and from school. This bus bay may also be utilised by coaches special events and excursions. It is recommended that a member of staff supervisors the bus bay during the drop-off and pick-up periods and for excursions. This measure is in place to ensure that students safely and efficiently embarking and disembarking from the vehicle, minimising the risk of incidents or congestion.

### 6.1.6 Servicing and emergency vehicle operations

As outlined in Section 3.1, servicing and emergency vehicles will access the school site from Abundance Road. A flexible will be adopted, allowing these vehicles to traverse the bus bay to access the school site (flexibility to alter this arrangement in later stages of the activity). This can be facilitated given the dissimilar operating hours of the school buses and service vehicles. Access to the school will be provided by the school caretaker. Waste collection and deliveries will take place outside of school peak times (typically between 5:00 and 7:30 AM), to avoid any conflict with kiss-and-ride operations.

### 6.1.7 Special event operations

For any major events held outside regular school hours (such as fetes, sports events, carnivals, community gatherings in the school hall, church meetings, etc.), a specific Event Traffic Management Plan must be created to handle traffic and parking concerns. It is important that this plan considers the changes to parking demand, particularly with respect to bus

bay usage. It is important that coaches accessing the school for special events are coordinated with the existing public and school bus services, to ensure that the demand at the bus bay does not exceed the maximum demand.

# 7 Governance framework

To effectively manage the School Transport Plan, a Travel Plan Coordinator (TPC) will be appointed. This individual will be responsible for:

- Engagement with the School Working Group (SWG) and the Transport Working Group (TWG) on a regular basis to discuss any challenges that may arise
- Implementing and promoting the actions outlined in the School Transport Plan and implementation plan
- Monitoring the Plan's effectiveness and ensuring its ongoing maintenance as outlined in the Monitoring and evaluation plan Section 8
- Providing transport-related advice to staff, management, and visitors as needed
- Coordinating with external parties such as the Council, public transport providers, and car share operators regarding Travel Plan matters

This role does not necessarily require a full-time commitment but should be clearly defined within the key responsibilities of the building management team.

# 8 Monitoring and evaluation plan

## 8.1 School Travel Plan Maintenance

It is important that the School Travel Plan undergoes annual reviews and updates to reflect any relevant changes. Some of the key areas that may require update include:

- Updates to the summary of existing conditions based on changes in the active and public transport networks in the surrounding areas
- Progress tracking against the proposed travel mode share scenario targets
- Analysis of the data and information collected during the schools operations throughout the year, to identify any issues or challenges that need to be resolved to support the schools operations and achievement of mode share targets. This may include updating the travel mode share targets to better reflect what actually occurs at the school

It is important that updates to the School Travel Plan are tracked through revisions and document control, to ensure that the changes made to the plan are traceable.

## 8.2 Monitoring and review actions

The following ongoing monitoring and review actions will support the long-term adequacy of the strategies outlined in the School Travel Plan:

- Reviewing the depersonalised student data from the Department of Education once the student enrolments have been confirmed. Complete this GIS analysis and compare with the previous results and recommendations.
- Undertake travel mode surveys to determine student mode share for travel to and from school. This will validate the Baseline, Medium and Reach scenario mode share targets and identify any updates required to better reflect the travel behaviour of the enrolled students.
- Undertake counts and physical surveys to assess the adequacy of the existing transport infrastructure for supporting access to and from the school as well as the adequacy of the on-site infrastructure (e.g. parking). This includes monitoring performance at the nearby intersection and local road network and identifying any measures that may be needed to improve operations.
- Review data on participation in active travel programs implemented at the school
- Engage with the community to receive feedback on school operations and ideas for strategies that may improve travel in the local area

## 8.3 Travel Mode Survey

There are several options for undertaking the student travel mode survey, including: a hands-up survey and online survey. These surveys are undertaken to gauge an idea of the number of students driving, walking, cycling and catching public transport to and from school. Other areas addressed during this survey include kiss and ride and on-street parking usage (for students who are driven / drive to school).

Staff members also participate in online surveys and are asked to provide the following key information:

- Suburb and postcode of where they normally live
- Travel mode to and from school and reason for using this mode.

## 8.4 Complaints handling

The school will create a spreadsheet for handling complaints, and anyone wishing to file a complaint will be asked to send it to the school's general email address. All complaints received will be recorded in the School's Complaints Register.

The school's administrative staff will monitor the emails and coordinate with the principal and TPC to address the complaints. Any actions taken will be documented in the Complaints Register.

During the first year of operations, the DoE communications team will manage all complaint handling. In the second year, this responsibility will be transferred to the school's staff.

# 9 Mitigation measures

### Scenario demand management

- To support the achievement of the 'Medium' and 'Reach' mode share scenarios, it is important that the behaviour change programs outlined in the implementation plan are carried out to differing degrees.
- Achieving the 'Reach Scenario' public transport mode share may require increases in service provision and frequency to support the increased demand (an additional 32 students). To support this scenario, on-going collaboration between the TPC and TfNSW will be required to monitor the sufficiency of the existing public transport network.
- To achieve the 'Reach' Scenario, approximately 12 additional bicycle parking spaces will need to be provided on-site to support the increased student and staff demand. Futureproofing the design e.g. setting aside available space for future bicycle parking, is recommended to support the achievement of these scenario targets.

### School transport operations

- Ongoing monitoring of the kiss-and-ride demand and bay provision will support the resilience of kiss-and-ride operations in the long-term.
- It is recommended that the school bell times are staggered by approximately 20 minutes with Medowie Public School.
- The proposed bus bay will also be used for transport to and from special events and excursions etc. It is important that this is coordinated with bus timetables, to ensure that coach parking does not interfere with bus service operations.
- It is recommended that a member of staff monitors the bus bay during peak periods (pick-up/drop-off and school excursions) to ensure student's safety and to minimise the risk of congestion at the bay.
- Ensure that waste collection and deliveries take place outside of the school peak times to avoid conflict with mini-bus parking during the drop-off and pick-up periods
- Major events held outside regular school hours will require an Event Traffic Management Plan to minimise the impact on the local traffic environment and on-street parking conditions.

### Monitoring and evaluation

- Undertaking regular monitoring and evaluation of data collected once the school is operational will support adaptation to change in the local traffic environment, anticipated student and staff mode splits, actual operations of the kiss and ride, bus bays and access arrangements. It is recommended to initiate this approximately 12 months after opening, once the school operations are fully established and have been fine-tuned.

# 10 Conclusions

The School Travel Plan sets out the plan for the ongoing management of travel to and from school as well as operations and initiatives to support sustainable travel mode share. The implementation plan supports the achievement of the 'Baseline', 'Medium' and 'Reach' mode share scenarios, through ongoing initiatives and actions that will encourage the increased use of sustainable modes from Baseline to Reach. A review of the scenario demand management notes that the current proposal does not support the 'Medium' and 'Reach' scenario mode share targets for cycling and public transport and that increased on-site provision for each mode would be needed to achieve these targets. However, it is recommended that the TPC monitors demand for these modes across the first year, to gauge both the adequacy of the design and the likely achievement of these mode share scenarios.

The Access Management Plan outlines the operations for access arrangements to the school. By staggering the school bell times with Medowie Public School, we can reduce the local traffic demand during peak periods and therefore improve safety and ease of operations. It is recommended that ongoing monitoring and evaluation of data is undertaken by the TPC and that this School Travel Plan is updated once annually to reflect any changes to the local environment and school operations.