

Greenway Park Public School upgrade and new public preschool

Transport Assessment

June 2025

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Contents

1	Intro	duction		1
	1.1	Docume	entation Review	2
	1.2	Propose	ed Activity Description	2
		1.2.1	Demolition	2
		1.2.2	Construction	2
	1.3	Activity	Site	3
	1.4	Transpo	ort Context	3
	1.5	Report	Scope	5
2	Exis	ting Con	ditions	6
	2.1	Policy C	Context	6
		2.1.1	Local transport plans and policy	6
		2.1.2	State Transport Planning	7
	2.2	School	Operation	9
		2.2.1	Bell Times	9
		2.2.2	Access gates	9
		2.2.3	Out of School Hours (OOSH) care	9
	2.3	Pedestr	ian Network	9
	2.4	Cycling	Network, Bicycle Parking and End of Trip Facilities	10
	2.5	Private '	Vehicle Operations	11
		2.5.1	Pick-up and drop-off	11
		2.5.2	Staff Parking	12
	2.6	Public T	ransport	13
		2.6.1	Direct service	13
		2.6.2	Cowpasture Road Bus Stops	16
	2.7	Travel F	Patterns & Demand	17
		2.7.1	Student Locations and Catchment Analysis	17
		2.7.2	Shortest Path Analysis	18
		2.7.3	Mode share - Baseline	19
	2.8	Existing	Traffic Conditions	20
		2.8.1	Existing Traffic Generation and Distribution	20
		2.8.2	Traffic Demand	22
		2.8.3	Traffic Modelling Methodology	23
		2.8.4	Site Layout	24
		2.8.5	Traffic Modelling Results	25
3	Futu	ıre Cond	itions	27
	3.1	Activity		27
	3.2	•	School Mode Share Scenarios	27
	3.3	-	School Site Transport Provision Summary	28

	3.4	Pre-scho	ol Requirements	29
	3.5	End-state	e Traffic Impact Assessment	32
		3.5.1	Traffic Generation	32
		3.5.2	Traffic Distribution	32
		3.5.3	Traffic Modelling	35
4	Cons	struction		37
	4.1	Construc	tion Area and Staging	37
	4.2	Construc	tion Operation	37
		4.2.1	Construction Staff Parking	38
	4.3	Impacts		38
5	Mitig	ation Mea	asures	39
6	Cond	clusion		40
A.	Traff	ic Count	Data	42
B.	SIDF	RA Model	ling Results	44
C.	Preli	minary C	onstruction Traffic and Pedestrian Management Plan	45
D.	New	Preschoo	ol Carpark Swept Paths	46
Ε.	New	Preschoo	ol Carpark Access Sight Distance Analysis	47

Tables

Table 1.1: Summary of relevant section of the Part 5 Guidelines and EP&A Regulation.	1
Table 1.2: Plans and reports reviewed	2
Table 2.1: Council transport plans and policy summary	6
Table 2.2: State transport plans and policy summary	7
Table 2.3: Bus stops serving Greenway Park PS	13
Table 2.4: Public bus service summary	14
Table 2.5: School bus services summary	14
Table 2.6: Public transport catchment analysis results	16
Table 2.7: Walking catchment analysis results	18
Table 2.8: Driving catchment analysis results	22
Table 2.9: Greenway Drive / Wyattville Drive / Parking Access roundabout SIDRA results (2025 Base Case Model)	26
Table 2.10: Chapman Street / Wyattville Drive roundabout SIDRA results (2025 Base Case Model)	26
Table 3.1: Future mode share scenarios summary	28
Table 3.2: Trip generation from the pre-school (TfNSW Guide to Transport Impact	
Assessment)	32
Table 3.3: Greenway Drive / Wyattville Drive / Parking Access roundabout SIDRA results (2026 Future Case Model)	36
Table 3.4: Chapman Street / Wyattville Drive roundabout SIDRA results (2026 Future Case Model)	36
Table 5.1: Proposed mitigation measures	39
Table 6.1: SIDRA result summary	41
Eiguroo	
Figures	
Figure 1.1: Aerial photograph	3
Figure 1.2: Site and surrounds	4
Figure 1.3: Proposed Greenway Park PS Masterplan	5
Figure 2.1 Greenway Park PS Pedestrian Network	10
Figure 2.2 Greenway Park PS cite coope	11
Figure 2.3 Greenway Park PS site access	12
Figure 2.4 Greenway Park PS Staff Parking	12
Figure 2.5: Bus stops serving Greenway Park PS	13
Figure 2.6: Public transport network extent	15
Figure 2.7: Public transport catchment analysis	16
Figure 2.8: Greenway Park PS student locations, walking catchment and intake area	18
Figure 2.10: Estimated baseline mode share	19
Figure 2.10: Estimated baseline mode share. Figure 2.11: Existing access arrangement to the Greenway Park PS	19 21
Figure 2.11. Existing access arrangement to the Greenway Park PS Figure 2.12: Greenway Park PS student locations, driving catchment and intake area	22
right 2.12. Greenway rank i O student locations, unving catchinent and intake alea	~~

Figure 2.13: 2025 Base Case traffic demand diagram at Greenway Drive / Wyattville Drive /	
Parking Access roundabout	23
Figure 2.14: 2025 Base Case traffic demand diagram at Chapman Street / Wyattville Drive	
roundabout	23
Figure 2.15: Greenway Drive / Wyattville Drive / Parking Access roundabout SIDRA layout	24
Figure 2.16: Chapman Street / Wyattville Drive roundabout SIDRA layout	25
Figure 3.1: Greenway Park PS proposed masterplan	27
Figure 3.2:Proposed preschool carparking	30
Figure 3.3: Future traffic distribution pattern (2026 AM Peak)	34
Figure 3.4: Future traffic distribution pattern (2026 PM Peak)	34
Figure 3.5: Future traffic demand at Greenway Drive / Wyattville Drive / Parking Access	
roundabout	35
Figure 3.6: Future traffic demand at Chapman Street / Wyattville Drive roundabout	35
Figure 4.1: Proposed construction site (in teal).	37

1 Introduction

This School Transport Assessment has been prepared to accompany a Review of Environmental Factors (REF) prepared for the Department of Education (DoE) relating to upgrades to Greenway Park Public School and new public preschool (the development) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (SEPPTI).

This document has been prepared in accordance with the *Guidelines for Division 5.1* assessments – Considerations of environmental health services facilities and schools, October 2024 (the Guidelines) by the Department of Planning, Housing and Infrastructure.

This report examines and takes into account the relevant environmental factors in the Guidelines and Section 170, 171 and Section 171A of the Environmental Planning and Assessment Regulations 2021 (EP&A Regulation) as outlined in Table 1.1.

Table 1.1: Summary of relevant section of the Part 5 Guidelines and EP&A Regulation.

Regulation / Guideline Section	Requirement	Response	Report Section
Guidelines for Division 5.1 Assessments: Consideration of environmental factors for health	A1) Impact during construction – such as noise, vibration, traffic, construction vehicle routes, access and parking, pollution / dust, water and stormwater flow, sediment and run-off, waste removal, servicing arrangements, bushfire, flooding, contamination, other construction occuring in the area	This report and the attached preliminary Construction Traffic and Pedestrian Management Plan set out mitigations for risks from construction activities, including possible construction vehicle routes, access and parking, and safety risks.	Section 4 And Preliminary CTPMP (Appendix C)
services facilities and schools	A2) vii) traffic and parking impacts, pedestrian and road safety (including pedestrian and cyclist conlict and safety), operation of the surrounding road network, impact on road capacity, including peak hour, intersection performance and any cumulative impact from surrounding approved developments, impacts of potential queueing in drop-off/pick-up zones and bus bays during pick-up periods, emergency drop-offs, servicing and loading/unloading areas, large vehicles and height clearances, parking arrangements and rates.	This report assesses traffic and parking impacts of the new pre-school on the surrounding road network, including intersection performance.	Existing Conditions: Section 2 Future Conditions: Section 3 Intersection performance – Sections 2.8.5 and 3.4.1.4
		Pre-school parking, pick-up and drop off arrangements are also discussed by this report, meeting the DCP requirements.	Pre-school parking: Section 3.4
	Consider in the context of availability, frequency, location and convenience of public transport and consequences of parking overflowing into adjoining streets.	Public and active transport context and suggested improvements also provided by this report.	Existing PT and active: Section 2.3, 2.4 and 2.6 Proposed interventions: Section 0

Regulation / Guideline Section	Requirement	Response	Report Section
Guidelines for Division 5.1 Assessments: Consideration of environmental factors for health services facilities and schools	R5) suitability and safety of drop-off and pick-up areas, including emergency vehicles, safety and convenience of proposed parking areas and rates, and off-and-on street parking on school/hospital location, vehicle and pedestrian access, provision of servicing, loading/unloading	Pre-school parking, pick-up and drop off arrangements are discussed by this report, meeting the DCP requirements.	Pre-school parking: Section 3.4

1.1 Documentation Review

The following plans / reports identified in Table 1.2 have been reviewed to inform the assessment contained within this report.

Table 1.2: Plans and reports reviewed

Discipline	Document name	Revision	Date	
Architecture (Fulton Trotter Architects)	GPPS-FTA-00-00-DR-A- 1101	14	2025/3/17	
Planning	Guidelines for Division 5.1 Assessments: Consideration of environmental factors for health services facilities and schools	1	2024/10	

1.2 Proposed Activity Description

The proposed activity for the Greenway Park Public School upgrade includes:

1.2.1 Demolition

- Demolish part of the boundary fence on Chapman Street for new vehicular crossover;
- Demolish parts of the boundary fence on Chapman Street for new gates;
- Demolish shade structure and associated concrete slab and footpath;
- · Demolish footpaths;
- Tree removal;
- Trenching for underground services; and
- Earthworks associated with new buildings and landscaping.

1.2.2 Construction

- Construction and operation of single storey classroom building with associated covered walkways;
- Construction and operations of a new preschool building, included covered walkways, new car park (12 spaces and 1 (1) accessible space) and vehicular crossover to Chapman Street;
- Installation of art work on Block H and Block J façades, as well as a preschool retaining wall;
- Laying of services within trenches;
- New pedestrian entry points;

- · Fencing and gates;
- Underground OSD tanks;
- Rainwater tanks;
- Shed for preschool;
- Outdoor play equipment for the preschool;
- New fire hydrant booster & associated building services connections;
- Retaining walls associated with the preschool;
- Signage;
- · Landscaping; and
- Associated earthworks.

1.3 Activity Site

The activity site is located on Wyattville Drive, West Hoxton and is legally described as:

- Lot 11 DP 858025; and
- Lot 20 DP 867282.

The north-west and south-west frontages of the site are to Chapman Street and the southeastern frontage is to Wyattville Drive. The surrounding context of the site is predominantly low density residential as well as a childcare centre to the north.

Figure 1.1 is an aerial photograph of the site.



Figure 1.1: Aerial photograph

1.4 Transport Context

Greenway Park Public School (Greenway Park PS) is a Primary School located in Hoxton Park, NSW, approximately 8km south-south-west of Liverpool CBD. The school is set within low-density suburban housing directly accessed by local streets Wyattville Drive and Chapman Street. The subject site is bordered by Greenway Drive on the north, Chapman Street on the south and west and Wyattville Drive on the east. The closest major road is Cowpasture Road,

running north-south, approximately 300m east of the site, accessed via Greenway Drive as a collector road.

Greenway Park PS had rapid growth between 2005 and 2018 resulting in more demountable teaching spaces required to meet the past teaching space demands. However, enrolments have been gradually decreasing since 2019. The school currently has:

- 662 primary school student enrolments in 2023, expected to drop to 601 student enrolments in 2026¹;
- 65 total staff members after upgrade

The site, its immediate surrounds and school intake area are shown in Figure 1.2.

The proposed activity is expected to cause the following changes to the school in relation to transport context:

- The addition of a pre-school with capacity for 60 students, ages 3-4, with an estimated 6 staff; and
- · An associated parking facility.

The replacement of the temporary classrooms with a new classroom building is like-for-like in terms of transport demand. The proposed masterplan of the site post-activity is shown in Figure 1.3.

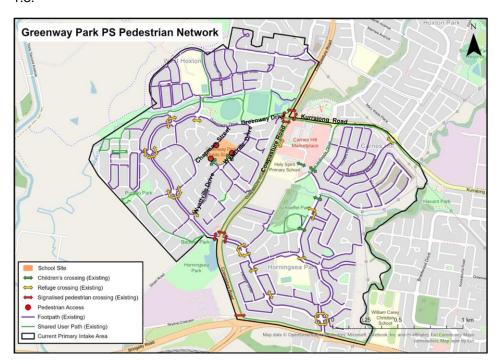


Figure 1.2: Site and surrounds

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¹ Based on EagleEye system student projections

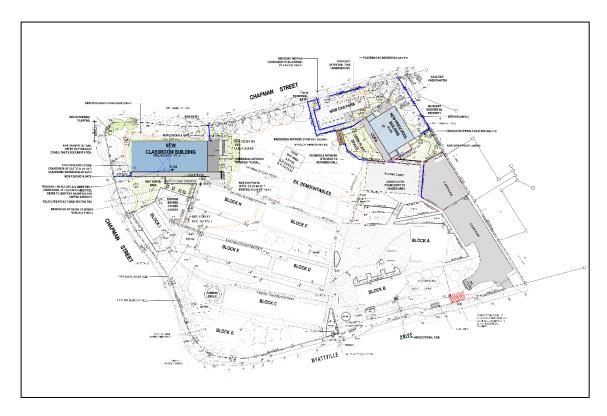


Figure 1.3: Proposed Greenway Park PS Masterplan²

1.5 Report Scope

This report supports the Review of Environmental Factors by assessing and identifying the potential impacts of the proposed site changes (primarily, the new pre-school) on the surrounding road network and its users, including active and public transport. This follows and expands upon the Rapid Transport Assessment undertaken in October 2023 also by Mott MacDonald.

The scopes of works for this Transport Assessment are as follow:

- Review of the existing traffic conditions on the surrounding road networks and travel pattern assessment for all modes of transport.
- Estimation of the traffic generation by the proposed new uses.
- Assessment of the traffic movements based on the traffic redistribution.
- Assessments of the impacts of proposed changes including construction impacts and endstate impact.
- SIDRA Intersection analysis for Greenway Drive / Wyattville Drive / Parking Access and Chapman Street / Wyattville Drive roundabouts based on existing and future traffic scenarios post-development.
- Assessment of the car parking and bicycle parking and kiss and drop zone requirements in accordance with the relevant standards.

² Source: GPPS-FTA-00-00-DR-A-1101 Revision 14 (Fulton Trotter Achitects, 2025/3/17)

2 Existing Conditions

2.1 Policy Context

2.1.1 Local transport plans and policy

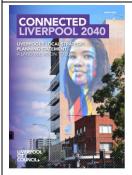
Local plans and policies relating to transport within the Liverpool City Council have been summarised in Table 2.1.

Table 2.1: Council transport plans and policy summary



Draft Local Housing Strategy (Liverpool City Council, 2020)

- A substantial increase in children aged 0-14 are forecast over the next 20 years in Liverpool. This represents a growth in family households with young children.
- Greenway Park PS is located within an 'established district'.
- The typical household type for an established district is mostly 'couple family with children'.
- There is no projected housing growth within the Greenway Park PS intake area.



Local Strategic Planning Statement 2040 (Liverpool City Council, 2020)

- Sets out a 20-year vision and priorities for land use planning in Liverpool, one of the fastest growing areas in Sydney.
- The planning priorities are divided into four areas: connectivity, productivity, liveability, and sustainability.
- Local employment, education and business opportunities will be enabled by the new Western Sydney Airport and associated Aerotroplis.
- Liverpool will transform into a vibrant destination with a strong 24-hour economy.
- The population is expected to increase by around 60% between 2019 and 2036 due to increased residential development and through new release development in growth areas. Population is forecast to increase to 276,970 by 2026, requiring an additional 9,982 dwellings compared to 2016.
- Council advocates a modal shift from private vehicle use to public transport, and seek to improve active transport options, that can reduce congestion while improving health.



Local Environmental Plan (Liverpool City Council, 2008)

- School site is designated as R2 Low Density Residential.
- Most of the surrounding area is also zoned R2 Low Density Residential
- A reserve north of Greenway Drive is zoned Public RE1 Recreation, with other small parks also zoned RE1 Public Recreation.
- To the east on Cowpasture Road, a small shopping area is zoned B2 Local Centre, and with areas of R3 Medium Density around it.



Liverpool Council Development Control Plan (Liverpool City Council, 2024)

- Part 1 of the DCP sets out requirements for development across Livepool LGA, including car parking and access, including:
 - Car parking for:
 - Child-care centres, applicable to the proposed pre-school.
 - Educational establishments, partially applicable to the existing primary school.
 - Bicycle Parking for:
 - Educational facilities and child-care centres, applicable to both the primary school and pre-school on site.
- Part 2.2 of the DCP sets out specific requirements for Hoxton Park, Carnes Hill
 and Prestons, covering the intake area. However, the car parking and access
 clauses only relate to residential development.

2.1.2 State Transport Planning

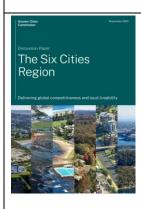
State plans and policies relating to transport have been summarised in Table 2.2.

Table 2.2: State transport plans and policy summary



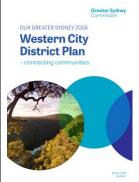
Future Transport Strategy (TfNSW, 2022)

- Sets the 40-year vision, direction and outcomes framework for customer mobility in NSW.
- It seeks to utilise changes in technology and innovation to create and maintain a world class, efficient and reliable state transport system over the next 40 years.
- The strategy focuses on the role of transport in delivering movement and place outcomes that support the character of the places and communities for the future.
- Encouraging greater use of active and public transport is a key feature of the strategy, recognising the importance of providing better connections and facilities to enable this.
- In particular, children and young people are identified as a key customer group for whom better access to safe, accessible and affordable transport is needed.



The Six Cities Region (Greater Cities Commission, 2020)

- Sets a 20-year vision for a world-class region of better jobs, housing, education and leisure that is productive, sustainable and liveable for everyone.
- It seeks for everyone to live in a vibrant local centre or neighbourhood, where daily needs are met within a 15-minute walk or cycle, and strategic centres, jobs, health and education are within 30 minutes by public transport.
- Aims to make local centres and neighbourhoods where people love to live, this
 including having access to social infrastructures, such as schools, and being well
 connected and walkable, and close to green spaces.
- Aims to make active or public transport the preferred choice and enhance connectivity within the cities.
- Greenway Park Public School is within the Western Parkland City which contains approximately 1.6M people, and 400,000 dwellings.





Western Sydney District Plan (Greater Cities Commission, 2018)

- Sets a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney.
- The vision for Western Sydney is to transform the district to provide residents with quicker and easier access to a wider range of jobs, housing types and activities. The plan primary focus is the Western Parkland City.
- The Western Parkland City will transform over the next 20 years, building on the new Western Sydney Airport and Badgerys Creek Aerotropolis, and the first stage of a North South Rail Link.
- Liverpool is identified as an established centre which forms the metropolitan cluster.
- Population within the Western City is projected to grow to 464,450 by 2036, of which there is estimated **high growth of children aged 5-19** in Liverpool Local Government Area (21,072). This highlights the importance of new education infrastructure to support population growth in the area.
- The plan states that safe walking and cycling links to schools encourage young people to be more active and better connect schools with local communities. They can reduce local congestion, improving safety for children and facilities.



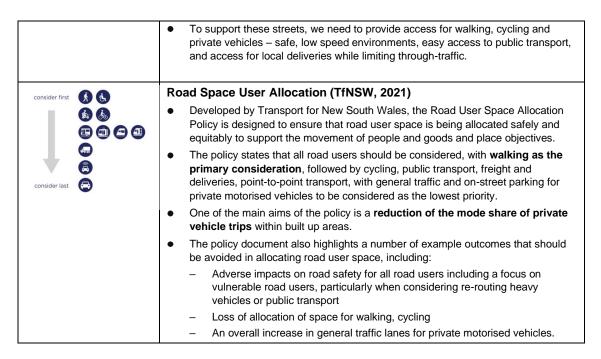
School Site Selection and Development (NSW Department of Education, 2020)

- The School Site Selection and Development Guidelines are designed to provide a checklist of the key issues to be considered when planning for new schools.
- In particular, the guidelines highlight the importance of locating schools within a
 well-structured movement network that provides appropriate road infrastructure,
 as well as safe pedestrian pathways from residential areas to the school site.
- As such, school catchments are designed to promote active transport options such as walking and cycling, to both promote healthy physical activity habits, and also to help reduce pressure on the surrounding road networks, which are often already congested and struggle to support the demand of high intensity drop-off and pickup times.
- To support this, it is therefore important that safe and appropriate walking and cycling infrastructure is provided around the school, including good quality pathways, open space connections and road crossing points, to encourage active transport.
- The guidelines also highlight the importance of school sites being located within
 walking distance of a train station, well serviced bus stops or other forms of public
 transport, thus minimising the need for car parking on the school site, freeing up
 valuable land for more efficient use.



Movement and Place Framework

- The Movement and Place Framework, is a cross-government framework for planning, designing and managing our transport network to maximise benefits for the people and places they serve.
- The framework is designed to encourage a greater understanding of both the place and movement function of an area, in order to design appropriately for that area.
- One of the tools of the Movement and Place Framework is the Classification of Street Environments. The classification uses a common language to help develop a shared understanding of the existing and desired street environments within the study area.
- Based on the existing and expected movement and place functions on the road network around Greenway Park Public School, these would typically be classified as Local Streets. On Local Streets, activity levels are typically less active than civic spaces, but these streets can have significant meaning to local people.
 On Local Streets, the general movement is slower and supports local access.



2.2 School Operation

The Greenway Park Public School is bordered by residential properties on the north, Wyattville Drive on the east, Chapman Street on south and western side.

2.2.1 Bell Times

As advised by the school, Greenway Park PS operates the following bell times:

Morning: 08:55Afternoon: 15:00

2.2.2 Access gates

Greenway Park Public School operates three pedestrian gates, as follows:

- The main gate on Wyattville Drive, accompanied by a supervised wombat crossing. This
 gate also provides vehicular access for staff only;
- Another gate on Chapman Street on the southern boundary of the school, also accompanied by a children's crossing. No supervisor was observed however, a teacher was present nearby during school pick-up time;
- Another gate onto Chapman Street on the western boundary, providing access to the school bus stop. No supervisor was observed on site.

2.2.3 Out of School Hours (OOSH) care

As of 2023, 25 students were enrolled in the Out of School Hours care programme, running either side of school hours from 7:00 -18:00 daily.

2.3 Pedestrian Network

Pedestrian network within the Greenway Park PS intake area is shown in Figure 2.1 below. There are footpaths along the frontage of the school that accommodate the three (3) school gates along Chapman Street and Wyattville Drive.

Chapman Street is located to the west and south of the school, with narrow footpaths around 1.2m wide at reasonable conditions, and Wyattville Drive is located to the east of the school, with shared user path (SUP) that are around 2m wide in good condition, as observed during the site visit. The site visits also observed pedestrian gaps in key areas that impedes connectivity.

There are two pedestrian crossings immediately outside the southern gates to the school. It was noted by the team during the site visit that the children's crossing on Wyattville Drive has a crossing supervisor and is well used by the students and parents, conversely the children's crossing on Chapman Street is unmarked and not supervised. Refuge crossing is provided around most roundabouts within the intake area, and signalised crossing across Cowpasture Road.

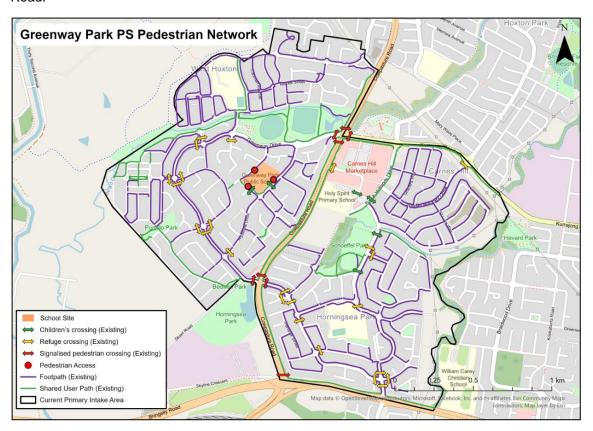


Figure 2.1 Greenway Park PS Pedestrian Network

2.4 Cycling Network, Bicycle Parking and End of Trip Facilities

The cycling network around the school is underdeveloped and disconnected as shown in Figure 2.2. The school has a shared path running along its eastern and southern frontages, but these are isolated as the connecting cycleways through local streets in West Hoxton, Horningsea Park and Carnes Hill are mostly yet to be constructed. Further, the Regional Route 2 shown on Cowpasture Road is currently a narrow footpath with minimal separation from vehicular traffic; not an attractive cycling route for school-aged children. The West Hoxton Strategic Route and the Horningsea Park Strategic Route are reasonable quality and provide broader access to adjacent areas but are largely irrelevant to the small intake area of the primary school.

Children under the age of 16 years can ride on the footpath unless there is a "no bicycles" sign, however, pedestrian footpaths along Chapman Street and in West Hoxton generally are often too narrow to accommodate both pedestrian and cyclists.

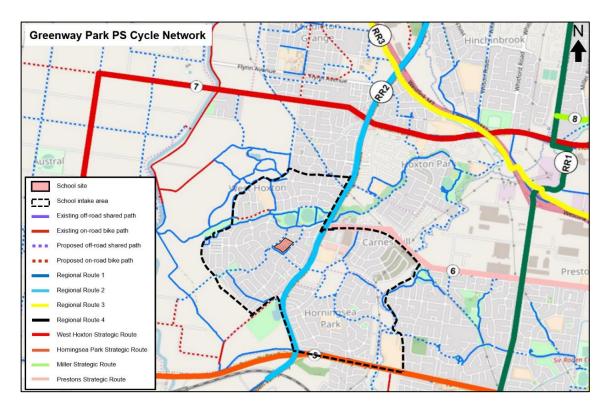


Figure 2.2 Greenway Park PS Cycle Network

Source: Liverpool Bike Plan 2018-2023

As advised by the principal's interview and confirmed in the site visit, there are currently no bicycle parking or end of trip facilities (EOTF) on site.

2.5 Private Vehicle Operations

2.5.1 Pick-up and drop-off

Private vehicle parking is provided on Chapman Street and Wyattville Drive as shown in pink in Figure 2.3. Chapman Street allows for five (5) vehicles, while Wyatville Drive can accommodate 13 vehicles. Pick-up and drop-off are valid during the period of 8:00-9:30am for Chapman Street, and 8:00-9:30am and 2:30-4:00pm for Wyatville Drive.

School site visit saw that there is high pedestrian and private vehicle activity at pick-up and drop-off zones during school bell times which causes congestion on both Chapman Street and Wyatville Drive. Additionally, the parent survey comments also reported significant congestion and poor behaviours (e.g. double-parking) around these pick-up / drop-off zones at bell times.



Figure 2.3 Greenway Park PS site access

2.5.2 Staff Parking

There are 50 existing car parking spaces at the school as shown in Figure 2.4. This parking space can be accessed via Wyattville Drive and restricted to staff only.



Figure 2.4 Greenway Park PS Staff Parking

2.6 Public Transport

2.6.1 Direct service

Greenway Park PS is served by public and school bus services at three bus stops, as summarised in Table 2.3 and illustrated in Figure 2.5. Travel times were calculated assuming:

- A walking speed of 1.1m/s.
- A combined waiting and crossing time at signalised intersections of 1m.

Table 2.3: Bus stops serving Greenway Park PS

TSN	Name	Travel Time (mm:ss)	Public Routes (no. services)	AM School Services	PM School Services
2171474	Greenway Park Public School, Chapman Street	00:10	N/A	1009 (1)	2014 (1) 2039 (1)
2171290	Greenway Park, Greenway Drive (eastbound)	03:30	852 (AM 1, PM 1) 854 (AM 1, PM 1) 859 (AM 4, PM 4)	1008 (1) 1034 (1)	N/A
2171372	Greenway Drive opp Greenway Park (westbound)	03:30	852 (AM 0, PM 1) 854 (AM 1, PM 0) 859 (AM 4, PM 4)	1009 (1) 1015 (1) 1053 (1)	2014 (1) 2027 (1) 2056 (1)

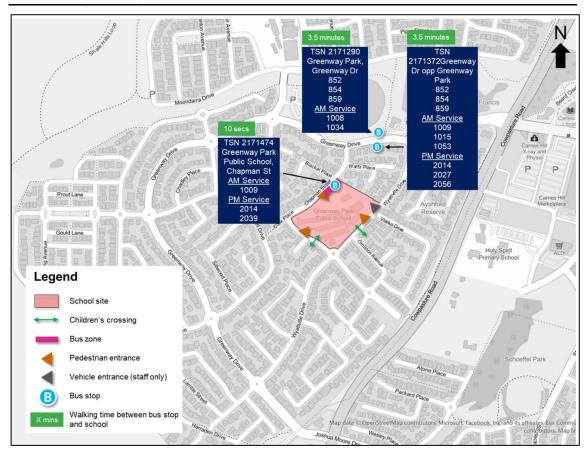


Figure 2.5: Bus stops serving Greenway Park PS

The public bus services to these stops during the AM School Peak (8:00-9:00) and hour after the PM school bell (15:00-16:00) are further detailed in Table 2.4 by number of services and

their arrival times, revised as scheduled for Monday 9/3/2025. In summary, from the stops on Greenway Drive the school is serviced by:

- In the AM School Peak:
 - 4 northbound and 4 southbound services;
 - 2 eastbound services and 1 westbound service.
- In the PM School Peak:
 - 4 northbound and 4 southbound services;
 - 2 eastbound services and 1 westbound service.

Table 2.4: Public bus service summary

Route	Direction and Description	TSN —	Total Services Arrival Times				
Number	Direction and Description	1311 —	08:0	08:00-09:00		15:00-16:00	
852	Carnes Hill Marketplace to Liverpool via Greenway Drive & Cowpasture Road (E)	2171290 Greenway Drive (EB)	1	8:41	1	15:27	
632	Liverpool to Carnes Hill Marketplace via Greenway Drive & Cowpasture Road (W)	2171372 Greenway Drive (WB)	0		1	15:58	
854	Carnes Hill to Liverpool via Greenway Drive & Hoxton Park Rd (E)	2171290 Greenway Drive (EB)	1	8:03	1	15:42	
854	Liverpool to Carnes Hill via Greenway Drive & Hoxton Park Rd (W)	2171372 Greenway Drive (WB)	1	8:09	0		
859	Carnes Hill to Edmondson Park Station (S)	2171290 Greenway Drive (EB)	4	8:09 8:21 8:36 8:51	4	15:07 15:29 15:44 15:59	
	Edmondson Park Station to Carnes Hill (N)	2171372 Greenway Drive (WB)	4	8:05 8:20 8:35 8:50	4	15:05 15:20 15:38 15:53	

The school bus services stopping at the identified bus stops are detailed in Table 2.5.

Table 2.5: School bus services summary

Route	Direction and Description	TSN	Scheduled Arrival		
Number			08:00-09:00	15:00-16:00	
1008	Fourth & Fifteenth to John Edmondson HS & Holy Spirit (E)	2171290 Greenway Drive (EB)	8:12		
1009	Cowpasture & Collarenebri to Hoxton Park Primary School (S)	2171474 Chapman Street	8:42		
1015	Wroxham St & Bernera Rd to Clancy College (N)	2171372 Greenway Drive (WB)	8:20		
1034	Bus Depot to St Therese Primary School (E)	2171290 Greenway Drive (EB)	8:11		

Route	Direction and Description	TSN	Scheduled Arrival		
Number		_	08:00-09:00	15:00-16:00	
1053	Wroxham St & Bernera Rd to Clancy College (W)	2171372 Greenway Drive (WB)	8:16		
2014	Thomas Hassall College to Horningsea Park (S)	2171474 Chapman Street		15:10	
2027	Hoxton Park HS to Horningsea Park (S)	2171372 Greenway Drive (WB)		15:44	
2039	Good Samaritan to Carnes Hill (N)	2171474 Chapman Street		15:39	
2056	Cecil Hills HS to Austral (W)	2171372 Greenway Drive (WB)		15:36	

The full extent of the services listed above is presented in Figure 2.6, showing the public transport coverage of a broad area between Liverpool and Austral, mostly outside of the intake area.

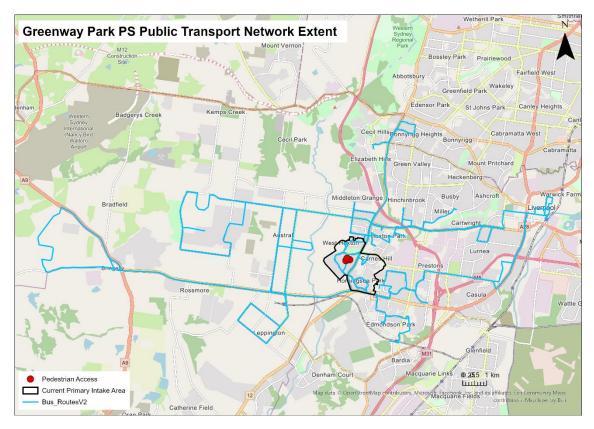


Figure 2.6: Public transport network extent

Considering the intake area more closely, Figure 2.7 shows the area outside the 15-minute walking catchment covered by the identified bus services. The detailed breakdown of students in relation to public transport access is shown in Table 2.6. The analysis shows:

- A notable gap in public transport coverage in the northern half of Carnes Hill.
- 20% of all students live beyond the actual 15-minute walking catchment and live within 400m of a PT stop with service to the school.

- When considering 800m to a PT stop, this increases to 32% of all students.
- However, 85% of students live within the 1600m and are therefore not eligible for the SSTS (i.e. a bus pass). Only 15% of students are eligible for the SSTS.

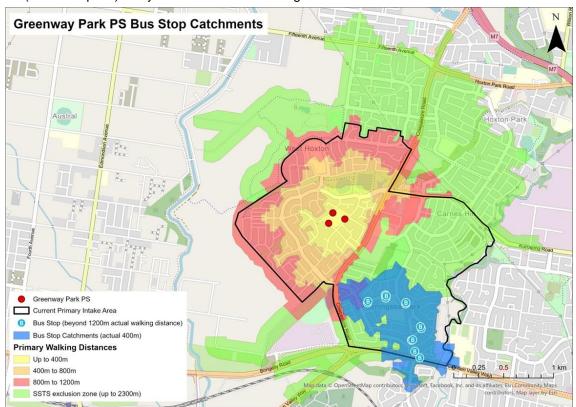


Figure 2.7: Public transport catchment analysis

Table 2.6: Public transport catchment analysis results

• • • • • • • • • • • • • • • • • • •	•						
Criteria	Not	ional	Actual				
Total Student enrolments living beyond a 1200m actual walking distance	173	26%	333	50%			
Within 400m of PT stop, living beyond 1200m actual walking distance	189	29%	131	20%			
Within 800m of PT stop, living beyond 1200m actual walking distance	246	37%	213	32%			
Note: The analysis above only considers the total student enrolments living beyond a 1200m actual walking distance and compares this against the total enrolments. Students living 1200m (an actual 15-minute walk) and closer are assumed to be able to walk to the school.							
Total students within 1600m notional /	F74	000/	FOF	050/			

86%

14%

565

97

85%

15%

2.6.2 Cowpasture Road Bus Stops

2300m actual SSTS exclusion zone
Total students living beyond 1600m

notional / 2300m actual eligible for SSTS

There are two bus stops on Cowpasture Road, namely:

 TSN 2171405 Cowpasture Road opp 155 on the northbound carriageway of Cowpasture Road, approx. 390m from the Wyattville Drive school gates; and

571

91

 TSN 2171284 139 Cowpasture Road on the southbound carriageway. Due to a lack of pedestrian crossing near this pair of bus stops, this stop is approx. 1200m from the Wyattville Drive school gates.

These buses serve the following additional bus routes:

- 851 Carnes Hill Marketplace to Livepool via Cowpasture Road
- 853 Carnes Hill to Liverpool via Hoxton Park Road
- 855 Rutleigh Park to Liverpool via Austral & Leppington Station.

However, because of the excessive walking distance along a major road to the southbound stop these have not been considered as part of the bus network serving the school.

2.7 Travel Patterns & Demand

2.7.1 Student Locations and Catchment Analysis

Depersonalised student location data was received from DoE for the 2023 enrolment. Additionally, a walking catchment analysis comparing the notional (i.e. "as-the-crow-flies") and actual walking distances from the school. The walking network for the actual walking distance considered formalised (i.e. hardstand) footpath network, including the network standalone paths (e.g. in parks) and roads with at least a footpath on one side of the road. These are presented along with the intake area in Figure 2.8. The analysis indicates:

- 568 students (~86%) live within the intake area, with 94 (~14%) students living outside;
- 329 students live within the actual walking catchment of the school (i.e. within 1200m), representing:
 - ~50% of total students; and
 - ~58% of students within the intake area.

The number of students in the notional and actual walking catchments are detailed in Table 2.7.

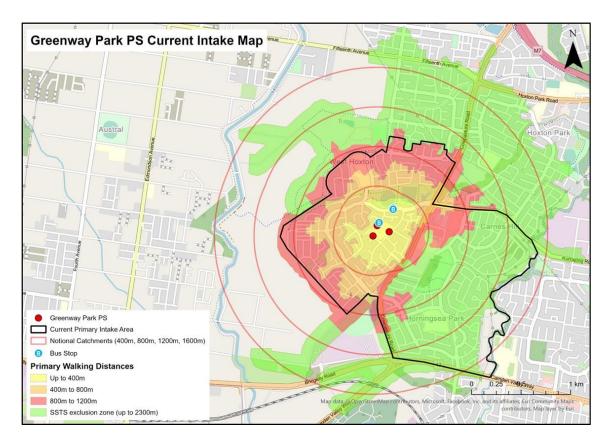


Figure 2.8: Greenway Park PS student locations, walking catchment and intake area

Table 2.7: Walking catchment analysis results

Walking Distance —	Not	ional	Actual		
Walking Distance -	Number	Percentage	Number	Percentage	
1-400m (5-min)	125	19%	87	13%	
401-800m (10-min)	215	32%	32% 116		
801-1200 (15-min)	149	23%	126	19%	
1201-1600m (2300m actual)	79	12%	12% 235		
Within intake area but beyond 1600 / 2300m	0	0% 4		0%	
Total	662	100%	662	100%	

2.7.2 Shortest Path Analysis

A shortest path analysis was undertaken on the student location within the walking catchment up to 2300m from the school. As illustrated in Figure 2.9, the likeliest route of approach is Wyattville Dr south, followed by Wyattville Dr North, Cook Place and Chapman Street north.

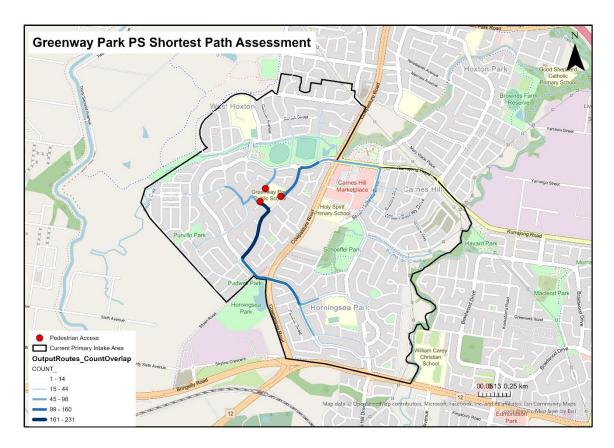


Figure 2.9: Shortest path analysis

2.7.3 Mode share - Baseline

Hands-up and Parents surveys were undertaken through Microsoft Forms in September 2023. The surveys representing 323 (49%) and 99 (15%) students respectively. The baseline mode share has been estimated as the average of the two surveys, summarised in Figure 2.10.

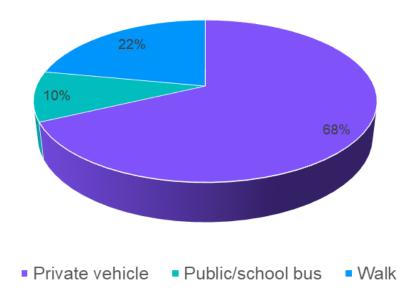


Figure 2.10: Estimated baseline mode share.

Most students are driven to school, with the parents' survey indicating that approximately half were dropped off. 22% of students walk to school, while 10% use bus services. No responses indicated bicycle, scooter or rail service use.

2.8 Existing Traffic Conditions

The following section assess existing traffic impact of Greenway Park PS on the following two locations:

- · Greenway Drive / Wyattville Drive / Parking Access roundabout; and
- Wyattville Drive / Chapman Street roundabout.

2.8.1 Existing Traffic Generation and Distribution

Existing traffic distribution analysis has been undertaken to populate the traffic distribution rates for use in the pre-school development assessment.

Based on the desktop assessment results, private vehicles can access the existing pick-up and drop-off zones on Chapman Street (northern side) and Wyattville Drive (eastern and western sides) via the following routes according to Google Maps:

- Route 1: Right turns from Green Drive eastbound into the Chapman Street or Wyattville Drive;
- Route 2: Left turns from Greenway Drive westbound into Wyattville Drive or Chapman Street; and
- Route 3: Through movements from Wyattville Drive north-eastbound via the Chapman Street / Wyattville Drive roundabout.

Figure 2.11 shows the existing access arrangements to the Greenway Park PS pick-up and drop-off zones.



Figure 2.11: Existing access arrangement to the Greenway Park PS

A driving catchment analysis including five catchment areas was undertaken using the 79% (520 out of 662) students location data provided by DoE as shown in Figure 2.12. The number of students in the five catchment areas and potential driving routes to the school are detailed in Table 2.8.

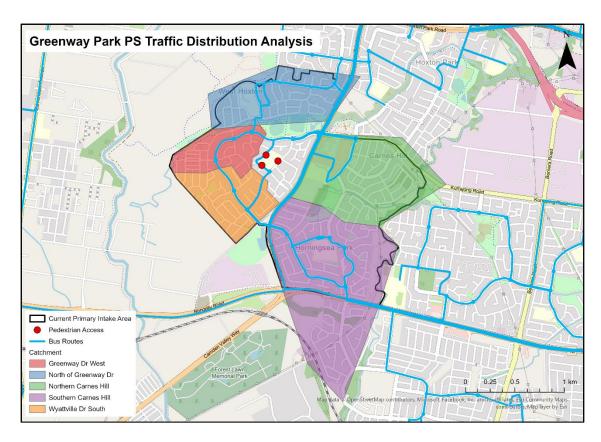


Figure 2.12: Greenway Park PS student locations, driving catchment and intake area

Table 2.8: Driving catchment analysis results

Catchment	Students counted	Proportion	Driving routes to the Greenway Park PS
North of Greenway Drive (Blue Catchment)	94	18%	Route 1 from Greenway Drive eastbound
West of Greenway Drive (Red Catchment)	63	12%	Route 1 from Greenway Drive eastbound
South of Wyattville Drive (Yellow Catchment)	86	17%	Route 2 from Wyattville Drive north-eastbound
Southern Carnes Hill (Purple Catchment)	194	37%	Route 2 from Wyattville Drive north-eastbound
Northern Carnes Hill (Green Catchment)	83	16%	Route 3 from Greenway Drive westbound
Total Students captured	520	79%	

2.8.2 Traffic Demand

A 2025 existing year scenario (2025 Base Case) was developed for the purpose of this assessment. 2025 Base Case traffic demands were considered based on the Vehicle Turning Movement Surveys (VTMS) data provided by Matrix Traffic and Transport Data (*Job No. AUNSW11595*). The respective date of the count used for each intersection is provided below:

- Greenway Drive / Wyattville Drive / Parking Access roundabout: 18th February 2025);
- Wyattville Drive / Chapman Street roundabout:12th February 2025.

The peak hours determined from the VTMS data for both roundabouts were:

AM peak hour: 08:00 – 09:00; and
PM peak hour: 14:30 – 15:30.

The line diagrams presenting the existing traffic volumes at two roundabouts are shown in Figure 2.13 and Figure 2.14, while the traffic count data is detailed in Appendix A.

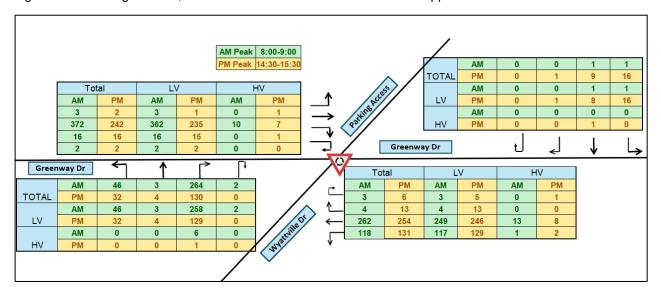


Figure 2.13: 2025 Base Case traffic demand diagram at Greenway Drive / Wyattville Drive / Parking Access roundabout

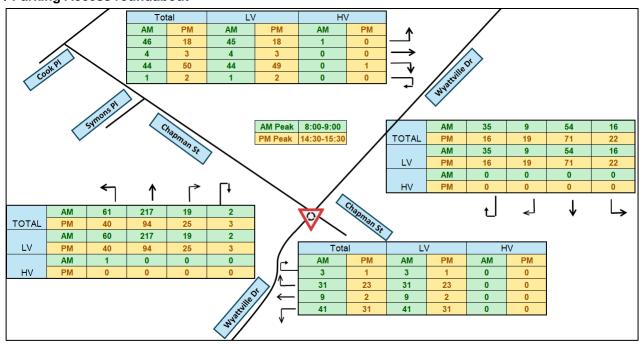


Figure 2.14: 2025 Base Case traffic demand diagram at Chapman Street / Wyattville Drive roundabout

2.8.3 Traffic Modelling Methodology

SIDRA Intersection modelling software (version 9.1.2.202) was used for the assessment in accordance, with the following assumptions considered for the analysis:

- The modelled peak hours were assumed in line with the existing peak hours at two roundabouts as per the VTMS date as stated in Section 2.8.1.
- SIDRA layout was coded based on the measurement using Nearmaps aerial imagery with approach distances measured to the nearest roundabout or signalised intersection or pedestrian crossing.
- Posted speeds were confirmed via a desktop assessment. Approach and exits speeds were set to 50 km/h for all local roads.
- Roundabout Capacity Model was set to SIDRA Standard with 'Same as Signalised Intersections' Roundabout Level of Service (LOS) method according to the SIDRA user guideline.
- Critical Gap and Follow-up Headway parameters were set as Program by default.
- Environmental Factor and Entry/Circulation Flow Adjustment parameters were set to the default values as 1.0 and 'Medium' respectively.
- Movement Calibration and Passenger Car Equivalent parameters for heavy vehicles were set to SIDRA default values.
- 30-minute peak flow period and 95% peak flow factors have been applied to all movements.
- All models developed were considered isolated and no network modelling was undertaken.

2.8.4 Site Layout

The modelled SIDRA Intersection layouts for two roundabouts are shown in Figure 2.15 and Figure 2.16.

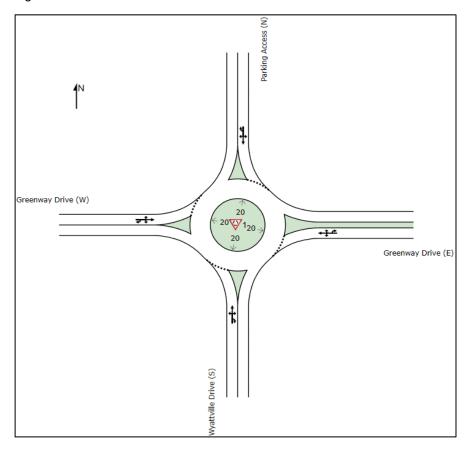


Figure 2.15: Greenway Drive / Wyattville Drive / Parking Access roundabout SIDRA layout

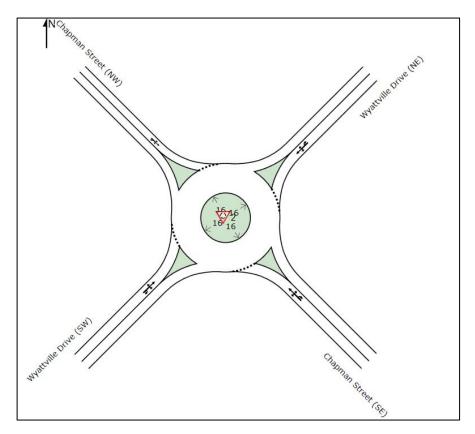


Figure 2.16: Chapman Street / Wyattville Drive roundabout SIDRA layout

2.8.5 Traffic Modelling Results

The following key parameters have been extracted from the SIDRA intersection modelling outputs for the purpose of this assessment and are defined below:

- Degree of Saturation (DoS): measurement of intersection demand relative to intersection
- Level of Service (LoS): acceptable LoS for existing intersections in NSW Los D or better.
- Average Delay (seconds): average delay experienced by a vehicle passing through the intersection across all movements
- 95% Back of Queue: 95th percentile value of the back of queue. Measurement of queueing experienced at the approach)

SIDRA Intersection results for the 2025 Base Case Model are summarised in Table 2.9 and Table 2.10 for two roundabouts respectively during AM and PM peak hours. Detailed outputs from the analysis can be found in Appendix B.

Table 2.9: Greenway Drive / Wyattville Drive / Parking Access roundabout SIDRA results (2025 Base Case Model)

2025 Base Case Model

	AM Peak Hour				PM Peak Hour			
Approach	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)
Wyattville Drive (S)	0.32	9	Α	14	0.17	8	Α	6
Greenway Drive (E)	0.27	3	Α	13	0.29	3	Α	13
Parking Access (N)	0.01	8	Α	0	0.03	4	Α	1
Greenway Drive (W)	0.41	5	Α	20	0.24	4	Α	10
INTERSECTION	0.41	5	Α	20	0.29	4	Α	13

Table 2.10: Chapman Street / Wyattville Drive roundabout SIDRA results (2025 Base Case Model)

2025 Base Case Model

	AM Peak Hour				PM Peak Hour			
Approach	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)
Chapman Street (SE)	0.08	6	Α	3	0.05	6	Α	2
Wyattville Drive (NE)	0.10	6	Α	4	0.12	5	Α	5
Chapman Street (NW)	0.12	8	Α	5	0.08	7	Α	3
Wyattville Drive (SW)	0.25	4	Α	12	0.13	4	Α	6
INTERSECTION	0.25	5	Α	12	0.13	5	Α	6

The key findings from the 2025 Base Case SIDRA modelling results are summarised as follows:

- Two roundabouts operate well, within capacity at LoS A in both AM and PM peak hours with the existing traffic demands.
- No queue overflow was observed for any approaches at each roundabout.

3 Future Conditions

3.1 Activity

The REF for the Greenway Public School Upgrade and New Public Preschool from a transport perspective involves the following changes:

- The addition of a pre-school with capacity for 60 students, ages 3-4, with an estimated 6 staff; and
- An associated car parking facility.

The proposed site plan is shown in Figure 3.1 provided by Fulton Trotter in Revision 14.

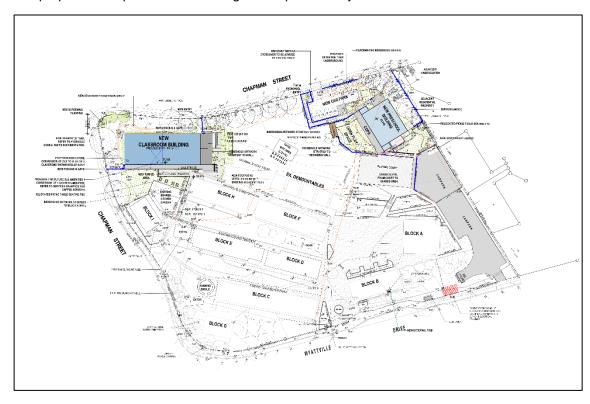


Figure 3.1: Greenway Park PS proposed masterplan³

3.2 Primary School Mode Share Scenarios

The Future Baseline, Moderate and Aspirational mode shares for the primary school operations at Greenway Park PS are detailed in the Greenway Park PS Rapid Transport Assessment (Mott MacDonald, 20243). The activity proposed by the REF is focussed on the new pre-school, which is expected to mainly be accessed by car, as assumed in Section 3.5.1 traffic generation.

³ Source: GPPS-FTA-00-00-DR-A-1101 Revision 14 (Fulton Trotter Achitects, 2025/3/17)

3.3 Primary School Site Transport Provision Summary

The provision of car parking, bicycle parking and kiss and drop spaces has been assessed against the moderate mode share scenario, as detailed below.

3.3.1.1 Car Parking

As Greenway Park PS is a primary school, student parking is not required. The required car parking for staff are as follows in accordance with Liverpool City Council Development Control Plan (DCP) 2008 Part 1 – General Controls for All Development (Table 11 and 13):

- One (1) space per staff member
- Two (2) DDA spaces per 100 spaces.

DoE advised that 65 staff currently work on site. With the minor reduction in enrolment numbers to 2026, this is unlikely to change markedly. There are currently 50 existing car parking spaces available to staff on site, while 94% of staff members travel by private vehicle. The DCP would require 65 car parking spaces.

However, given the size of the school, a staff carpool program could be used to both support sustainable travel and reduce car parking requirements. A reduction of 20% is proposed with a successful carpooling programme, bringing the proposed parking provision for the school down to 50 spaces, as currently provided.

3.3.1.2 Bicycle Parking and End of Trip Facilities

The Rapid Transport Assessment calculated that 78 bicycle parking spaces (73 for students and five (5) for staff) should be provided for the school (in its entirety, not for this activity) and one (1) end of trip facility. Currently no bicycle parking is provided on site. The new classroom building is capable of accommodating 184 students, which equates to 22 bicycle spaces being required for the classroom activity. However, the school principal has indicated that encouraging cycling would exacerbate existing safety concerns on the surrounding footpath network. Consequently, bicycle parking and end of trip facilities should not be considered for this site at this stage.

3.3.1.3 Kiss and Drop

The moderate mode share scenario shows the estimated pick-up / drop-off private vehicles are 62% (equivalent to 373 students). Greenway Park Public School has informed that approximately 25 students that are dropped off by private vehicle have Out of School Hours (OOSH) care / extracurricular activities before and after school. This would result in 348 students during peak hour for school pick-up/drop-off.

An average vehicle occupancy was assumed as two students per vehicle as per a survey commissioned by Roads and Maritime Services in February 2014. This results in 174 vehicles during peak hour for school pick-up / drop-off.

The existing kiss and drop zones have 3 parking spaces on Chapman Street for morning peak only and 13 vehicle parking spaces on Wyattville Drive. The parking requirement for school pick-up and drop-off zone is estimated to be 12 parking bays for 30-minute period with the dwell time assumption of two minutes per vehicle in accordance with TfNSW requirement⁴.

To ensure the children's safety, school staff supervision is required for pick-up and drop-off operation management to reduce the traffic and illegal parking.

703102073 | 1 | H | June 2025

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⁴ Source: https://www.transport.nsw.gov.au/roadsafety/parents/school-safety

3.4 Pre-school Requirements

The provision of car parking, bicycle parking and off-street car parking spaces for the new preschool has been assessed as detailed below.

3.4.1.1 Off-Street Carparking Provision

Off-street parking requirement has been determined in accordance with the Liverpool City Council DCP General Controls for Development Table 11, as a child-care centre, as follows:

- One (1) space per staff member
 - Assuming a student to staff ratio of 10:1 on a student body of 60 children as advised by DoE, 6 staff will require 6 spaces.
- One (1) space per 10 children.
 - For 60 children, this requires 6 spaces.

Thus the DCP requires 12 spaces for both staff all-day parking and student drop-off. The proposed provision of 12 spaces plus one (1) accessible space meets the requirements of the DCP. Given the short length of stay for pick-up and drop-off, the on-site parking spaces are available for staff use.

3.4.1.2 Bicycle Parking and End of Trip Facilities

Bicycle parking requirements for the preschool have been assessed according to Green Star guidance. This results in a total of one (1) secure bicycle parking for 6 staff for the preschool component of the activity. Additionally, Green Star guidance requires one (1) End of Trip Facility for the preschool. However, given the safety issues identified by the school principal, bicycle parking should not be considered for this site and the 1 bicycle parking space and EOTF are not proposed as part of the REF activity.

3.4.1.3 Off-Street Carparking Assessment

A car parking compliance check was undertaken based on the proposed preschool carpark design in Revision 14 provided by Fulton Trotter Architects as shown in Figure 3.2 in accordance with the following Australian standards:

- AS/NZS 2890.1:2004 Off-Street Carparking; and
- AS/NZS 2890.6:2009 Parking for People with Disabilities.

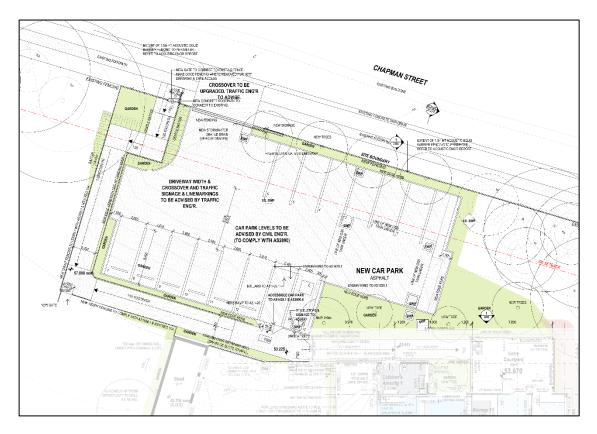


Figure 3.2:Proposed preschool carparking⁵

With respect to the carparking layout, the following applies:

- From Table 1.1 (AS 2890.1:2004), Classification of Off-street Carparking Facilities, short term city and center parking is identified as User Class 3 which is appropriate for the proposed preschool carparking used for parental short-term drop-off and pick-up.
- The proposed parking space dimensions of 2.6m wide x 5.4m long with 6.2m aisle length is appropriate for User Class 3 spaces as per AS 2890.1:2004 Figure 2.2.
- The southern end of parking aisle is extended 1m beyond the last parking space at the blind aisles, compliant with AS2890.1:2004 2.4.2 (c).
- The northern end of the parking aisle includes a turnaround space and a blind aisle extension of 1m to facilitate manoeuvres into parking space 1.
- Wheel stops are provided to prevent vehicle encroachment into pedestrian footpath when manoeuvring into a parking space, with placement of wheel stops at 900mm to front of the parking bay, compliant with Clause 2.4.5.4 within AS/NZ 2890.1:2004.
- Access to local road is identified as Category 1 access facility for the Class 3 carparking with less than 25 parking spaces. Access driveway width is required to be 3m to 5.5m as shown in Table 3.2 (AS2890.1:2004), combining entry and exit. The proposed driveway width is 6.2m, exceeding the requirement.
- Additionally, Liverpool Council Engineering Guidelines for Development and Subdivision
 Works (2006) indicates a 3-6m wide driveway is required for Category 1 driveways, which
 the proposed driveway exceeds. As per this document, the driveway splays should be 0.5m
 wide and 0.5m deep on both sides of the driveway. RP Infrastructure and Fulton Trotter
 Architects confirmed that this driveway splay geometry will be adopted in detailed design.

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⁵ Resurce: GPPS-FTA-00-00-DR-A-1101 Revision 14 (Fulton Trotter Achitects, 2025/3/17)

- An accessible parking space is provided in accordance with the requirements of AS/NZS 2890.6:2009, at 2.4m wide, 5.4m long and with an aisle width of 6.2m. The accessible space is accompanied by a shared space provided at 2.4m wide and 5.4m long with the strip pavement marking and a bollard placed at 830mm to the parking aisle.
- The road width of Chapman St has been estimated from Google Maps aerials, conservatively at 5.5m and shown in the swept path analysis. Chapman St at the driveway access is not linemarked, so a centreline has been assumed and shown in the sight distance analysis.

Vehicle turn path checks have been undertaken using Autodesk's Vehicle Tracking software at the driveway access, designed for one B99 vehicle undertaking either an entry or exit manoeuvre in accordance with AS/NZ 2890.1: 2004 Clause 2.5.2 (c). This analysis is presented in Appendix D, noting:

- Entry and exit manoeuvres were possible from all directions. Only the left-in and left-out have been presented, being the most geometrically constrained.
- These movements are possible within the proposed driveway width, splay and existing road width by allowing vehicles to cross the centreline. This is considered acceptable given the low traffic environment and is not anticipated to delay passing traffic.
- The northern kerb of Chapman St is controlled by a No Stopping sign in north of the 7 Chapman St driveway, while the driveways of 7 Chapman St and 9 Chapman St will also provide clear space to allow the exit manoeuvres.

Sight line analysis has been undertaken in accordance with AS/NSW2890.1:2004 Clause 3.2.4. With the posted speed limit of 50km/h outside of school hours, a design speed of 60km/h has been assumed, noting:

- A minimum of 65m sight distance, with 83m desirable, to oncoming traffic in both directions, accounting for permanent obstructions. This is also consistent with AUSTROADS stopping sight distance requirements.
- Sight distance to the right is assessed against the visible distance along the kerb, while sight distance to the left is measured along the centreline.
- As shown in Appendix E, the sight distance for vehicles is unobstructed for the required distance.

Additionally, the pedestrian sight triangles were considered, noting:

- As the driveway provides both entry and exit, the right-hand sight triangle is not required because vehicles will not be exiting from that side, as per AS/NS2890.1:2024 Figure 3.3.
- The 2.5m deep and 2m wide area to the left-hand side of the driveway, inside the property boundary, required by AS/NZ2890.1:2024 Figure 3.3 does include a 1200mm high fence compliant with AS1926.1 and NSW Regulation 104. The fence treatment should either not restrict visibility or be relocated further south, to be resolved in detailed design.

The desktop review, swept path analysis and sight distance analysis has found that the proposed arrangement is generally compliant, with two aspects driveway splay and pedestrian sight triangle to be resolved detailed design.

3.4.1.4 Loading and Servicing

The new preschool can be serviced a number of ways:

- Through the proposed car parking facility for the new preschool. Outside of pick-up and drop-off times, the car park is expected to only be used by staff, leaving at least 6 spaces available
- Through the existing car park for the primary school, noting this is generally full.

 Through informal on-street car parking; the current way the existing primary school is serviced as per the principal's interview.

Of these, loading through the proposed car parking facility is preferred for deliveries and servicing outside the school peaks for vehicles as large as a van, as required by the Liverpool City Council DCP Table 11. The other identified alternatives may be required for infrequent larger vehicles.

3.5 End-state Traffic Impact Assessment

End-state SIDRA Intersection models have been developed to assess the traffic impact of the activity's end-state on two surrounding roundabouts. The following sections presents the traffic generation and distribution, modelling methodology and SIDRA Intersection results for the traffic modelling undertaken with consideration of the proposed development.

3.5.1 Traffic Generation

The traffic generation for the proposed pre-school has been calculated in accordance with the Guide to Transport Impact Assessment (TS 00085, Version 1.1) prepared by TfNSW. This analysis has been assumed to generate the same proportion of trips from five catchment areas according to the driving catchment analysis stated in Section 2.8.1. Detailed trip generation calculation is shown in Table 3.1 and associated traffic distribution is shown in Figure 3.3 and Figure 3.4 for AM and PM peak hours respectively.

Table 3.1: Trip generation from the pre-school (TfNSW Guide to Transport Impact Assessment)

	No. of stude nts	Rate (Vehicle trips / child)	New trips	North of Greenway Drive (Blue)	West of Greenway Drive (Red)	South of Wyattville Drive (Yellow)	Southern Carnes Hill (Purple)	Northern Carnes Hill (Green)
AM Peak	- 00	0.86	52	9	6	9	19	8
PM Peak	- 60	0.76	46	8	6	8	17	7

No additional trips are expected to be generated from Greenway Park PS in 2026 due to minor reduction in the enrolment number as indicated in the future mode share scenarios in Section 3.2.

3.5.2 Traffic Distribution

Future traffic distribution post-development has been undertaken with the following assumptions:

- Future traffic distribution patterns for the Greenway Park PS are not expected to change based on the existing conditions.
- Vehicle trips are appropriately represented by Google Maps direction routes from student locations to/from the pre-school.
- The only egress route was considered in this assessment as follows from pre-school carparking to parent's workplace in the AM peak hour due to the closest proximity:

- Right out from the pre-school carparking onto Chapman Street and egress from Chapman Street via the right turn at the Greenway Drive / Chapman Street unsignalised intersection;
- Travel in forward direction via the Greenway Drive / Wyattville Drive / Parking Access roundabout and further egress onto Cowpasture Road and Kurrajong Road.
- It is assumed that the ingress and egress routes in the AM peak are to be reversed during the PM peak, following the converse of each route.
- Future generated traffic volumes will be counted twice during the peak hour since ingress and egress the pre-school can occur within the same hour.

Future traffic distribution patterns with generated traffic from the new pre-school are shown in Figure 3.3 and Figure 3.4 for AM and PM peak hours respectively.

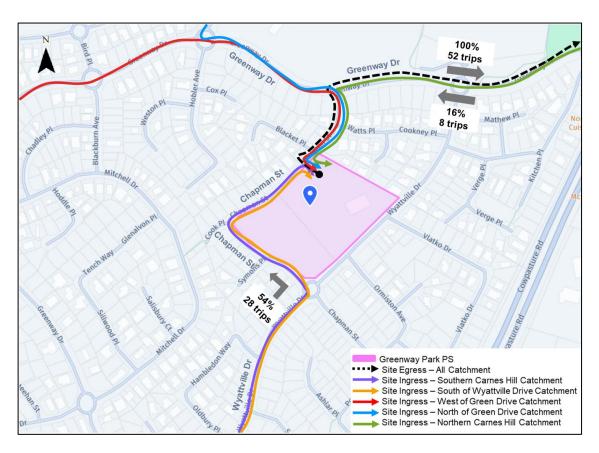


Figure 3.3: Future traffic distribution pattern (2026 AM Peak)

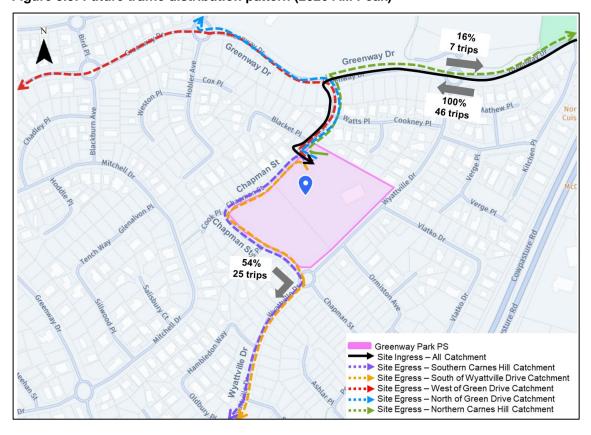


Figure 3.4: Future traffic distribution pattern (2026 PM Peak)

3.5.3 Traffic Modelling

3.5.3.1 Methodology and Assumptions

The following assumptions has been applied to the SIDRA modelling:

- New pre-school generated vehicle trips have been assumed as light vehicle (LV) in SIDRA for the school pick-up and drop-off travel purpose.
- The modelled peak hour has been assumed to be the same as the 2025 Base Case.
- There were no upgrades made to the road geometry.
- All the parameter settings in 2026 Future Case modelling have been left unchanged from the 2025 Base Case, following the same assumptions as stated in Section 2.8.3.
- Future traffic volumes have been calculated and summarised in Figure 3.5 and Figure 3.6 following the methodology in Section 3.5.2.

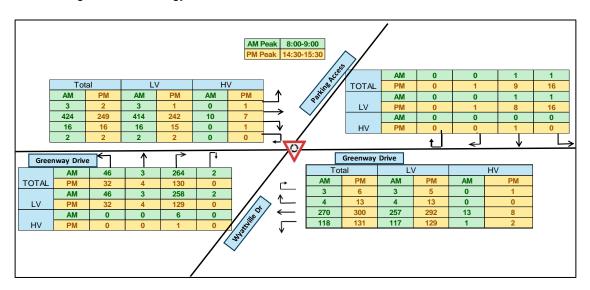


Figure 3.5: Future traffic demand at Greenway Drive / Wyattville Drive / Parking Access roundabout

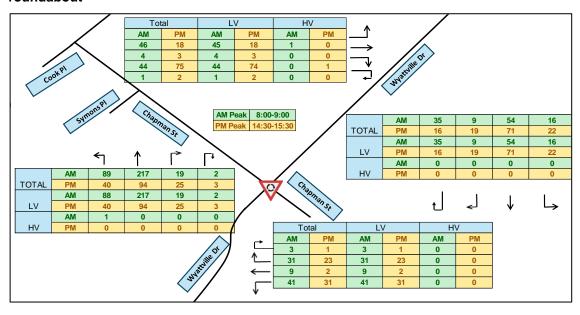


Figure 3.6: Future traffic demand at Chapman Street / Wyattville Drive roundabout

3.5.3.2 Modelling Results

SIDRA Intersection results for the 2026 Future Case Model are summarised in Table 3.2 and Table 3.3 for two roundabouts respectively during AM and PM peak hours. Detailed outputs from the analysis can be found in Appendix B.

Table 3.2: Greenway Drive / Wyattville Drive / Parking Access roundabout SIDRA results (2026 Future Case Model)

ว	വാട	Future	Casa	Model	
_	บ/ก	ruture	CASE	wooei	

		AM Pea	ık Hour			PM Pea	k Hour	
Approach	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)
Wyattville Drive (S)	0.34	9	Α	16	0.18	9	Α	8
Greenway Drive (E)	0.27	3	Α	11	0.32	3	А	12
Parking Access (N)	0.01	10	Α	0	0.04	5	Α	2
Greenway Drive (W)	0.48	6	Α	28	0.25	4	Α	13
INTERSECTION	0.48	6	Α	28	0.32	5	Α	13

Table 3.3: Chapman Street / Wyattville Drive roundabout SIDRA results (2026 Future Case Model)

2026 Future Case Model

			AM P	eak Hour			PM P	eak Hour
Approach	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)
Chapman Street (SE)	0.08	6	Α	3	0.06	6	Α	2
Wyattville Drive (NE)	0.10	6	Α	4	0.12	5	Α	5
Chapman Street (NW)	0.12	8	Α	5	0.10	8	Α	5
Wyattville Drive (SW)	0.27	4	Α	13	0.13	4	Α	6
INTERSECTION	0.27	5	Α	13	0.13	6	Α	6

The key findings of 2026 Future Case modelling are as follows:

- Two roundabouts operate well, within capacity at Level of Service (LoS) A in both AM and PM peak hours with the future year traffic demands.
- No queue overflow was observed for any approaches at each roundabout.

4 Construction

4.1 Construction Area and Staging

The construction of the permanent classrooms and new pre-school are to be undertaken in a closed construction site along the western frontage of the school, as advised by DoE and shown in Figure 4.1.

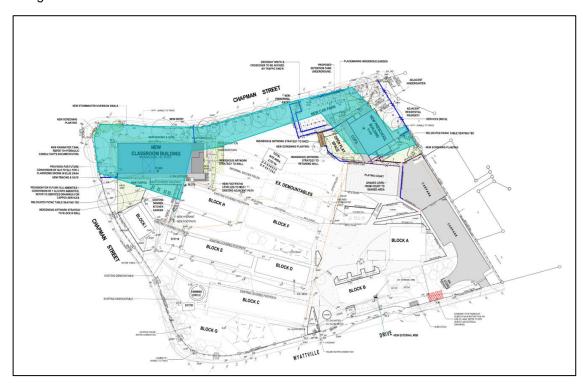


Figure 4.1: Proposed construction site (in teal).6

Access to this construction area will be provided from Chapman Avenue via the proposed preschool driveway on the western frontage.

The preliminary Construction Traffic and Pedestrian Management Plan attached in Appendix C, with highlights presented below.

4.2 Construction Operation

Deliveries to and removals from the site area expected to access and egress the site as follows:

Ingress

- Access from the broader road network is provided provided by Cowpasture Road and Kurrajong Road.
- Access from the above state roads is provided by the signalised intersection of Cowpasture Road / Kurrajong Road (TCS 3931), with all movements and therefore approach from all directions possible:

⁶ Source: GPPS-FTA-00-00-DR-A-1101 Revision 14 (Fulton Trotter Achitects, 2025/3/17)

- From the northern approach (Cowpasture Road) into Greenway Drive: via a signalised right turn.
- From The eastern approach (Kurrajong Road) into Greenway Drive: via the signalised through movement.
- From the southern approach (Cowpasture Road) into Greenway Drive: via an unsignalized left slip lane.
- Access from Greenway Drive to Wyattville Drive is preferred, provided by a roundabout.
- Further access to the construction site access on Chapman Street is provided by the roundabout at Wyattville Drive / Chapman Street.
- Alternatively, the priority intersection at Greenway Drive / Chapman Street provides direct access to Chapman Street and the construction site access.

Egress

- It is assumed that vehicles will be able to turn around within the construction site, and egress from the proposed pre-school driveway onto Chapman Street in the forward direction.
- From Chapman Street, vehicles are expected to proceed to Greenway Drive via the giveway controlled right turn at the priority intersection of Greenway Drive / Chapman Street.
- Further Egress onto Cowpasture Road and Kurrajong Road is possible in all directions via the signalised intersection of Cowpasture Road / Kurrajong Road.
- Alternatively, if the priority intersection of Greenway Drive / Chapman Street is difficult, vehicles can egress from the driveway southbound down Chapman Street, then Wyattville Drive and Greenway Drive via the existing roundabouts.

Construction traffic volumes were not available at the time of assessment. A quantitative assessment should be undertaken by the contractor. Design vehicles will also be defined by the contractor, although it is noted that Wyattville Dr and Chapman St will likely limit vehicle sizes to an HRV.

4.2.1 Construction Staff Parking

A small construction staff are expected to park on-street or at Greenway Reserve, given the absence of on-site parking.

4.3 Impacts

Due to low observed volumes on the local road network, minimal impact to intersection performance is expected at Greenway Drive / Wyattville Drive, Wyattville Drive / Chapman Street and Chapman Street / Greenway Drive during construction. Additionally, Cowpasture Road and Kurrajogn Road carry large volumes and construction induced traffic is expected to only marginally increase volumes on those roads in comparison to background flows.

With the introduction of larger vehicles into the local road network, the risk and hazard of a pedestrian-vehicle collision are increased. This will be mitigated by excluding deliveries near bell times, to reduce the exposure of students walking to and from school or being picked up.

Outside of road network and safety impacts, direct access to the bus stop on Chapman Street will be hindered temporarily by the construction site and the removal of an internal footpath. Alternative access from the southern school gate is possible, lengthening the walking trip to the bus stop. Supervision of the trip and the construction site access are recommended as mitigation measures, as well as the exclusion of construction vehicle movements at school peak times. Additionally, a relocation of the bus stop south of the construction site access is recommended to eliminate the conflict point in both construction and operation.

5 Mitigation Measures

The proposed mitigation measures in relation to transport for this REF are presented in Table 5.1

Table 5.1: Proposed mitigation measures

Mitigation	Timeframe	Mitigation Measure	Reason for Mitigation Measure
Construction Hours	Construction	Construction restricted to Mon-Fri 7:00-18:00 and Saturday 8:00-13:00	As per EPA regulations, minimising impacts to local residents. Division 5.1 Guidelines: A1) Impact during construction
Construction Vehicle Time Exclusion	Construction	Construction vehicle moveements shall not occur during school peak hours (8:00 – 9:30, 14:30-16:00).	Eliminate the risk of pedestrian-vehicle collision during the arrival and departure from school. Division 5.1 Guidelines: A1) Impact during construction
Construction Vehicle Routing	Construction	The suggested routing has been devised from the Cowpasture Road / Kurrajong Drive intersection to limit the route through suburban streets.	Limit noise and traffic impacts on residential areas during construction. Division 5.1 Guidelines: A1) Impact during construction
Vehicle Size Restriction	Construction	Vehicles used in construction to be restricted to HRV or smaller	Exclude large and oversize vehicles on suburban streets. Division 5.1 Guidelines: A1) Impact during construction
Reversing Avoidance and Supervision	Construction	Vehicles should avoid reversing into and out of the site, and where unavoidable do so under supervision.	Reduce the risk of pedestrian-vehicle collision. Division 5.1 Guidelines: A1) Impact during construction
Bus Stop Relocation	Construction and Operation	Relocate the bus stop south of the construction site access / future driveway access.	Reduce the risk of pedestrian-vehicle collision by removing students going to the bus from the driveway crossover. Division 5.1 Guidelines: A2) pedestrian conflict and safety. R5) Suitability and safety of drop-off and pick-up areas.
Pre-school Car Parking Provision	Operation	Provide pre-school parking compliant with the DCP to provide both staff parking and drop-off/pick-up.	Reduce impacts on on-street parking occupancy. Remove pick-up/drop-off from street environment. Division 5.1 Guidelines: R5) Suitability and safety of drop-off and pick-up areas.

6 Conclusion

Greenway Park PS is an existing primary school within Liverpool City Council. Current enrolment at the school is 662 students in 2023. However, enrolment projections indicate a minor reduction to 601 student enrolments in 2026. The proposed activity comprises of the construction of a pre-school with an associated car park.

Mott MacDonald has been engaged by Department of Education to provide transport planning advice for the activity comprising the Greenway Park Public School Upgrade and New Public Preschool. The key outcomes of this study are as follows:

- Minimal construction impacts are expected on the surrounding network due to the marginal increase of induced traffic demands. The potential risk and hazard of a pedestrian-vehicle collision will be mitigated by avoiding construction work during school peak hours to reduce the risk exposure to students.
- Three scenarios for future mode shares have been investigated including future baseline, moderate and aspirational scenarios. The moderate mode share targets have been applied for the assessment of the proposed development as the mid-points of other two scenarios.
- A total of 52 and 46 new trips are generated from the proposed pre-school during the AM and PM peak hours. However, there is no expected additional vehicle trips generated from the primary school due to the minor reduction of future student enrolment.
- The existing provision of 16 pick-up and drop-off parking bays on Chapman Street and
 Wyattville Drive can meet the requirements based on an assumption of 2-minute dwell time
 for each car. However, school staff supervision is recommended to manage the pick-up and
 drop-off operation to ensure the students' safety and reduce the illegal parking.
- A staff carpool program could be used to both support sustainable travel and reduce car
 parking requirements. A reduction of 20% is proposed with a successful carpooling
 programme, bringing the proposed parking provision for the school down to 50 spaces, as
 currently provided.
- New pre-school carpark has been proposed to cater the requirements of staff parking and
 off-street parking for children pick-up and drop-off including a total 12 vehicle parking spaces
 plus one (1) accessible parking space. Review, swept path analysis and sight distance
 analysis found the arrangement to be generally compliant with AS2890.1, with two aspects
 driveway splay and pedestrian sight triangle to be resolved detailed design.
- SIDRA intersection models have been developed to assess the traffic impact at the analysis
 for Greenway Drive / Wyattville Drive / Parking Access and Chapman Street / Wyattville
 Drive roundabouts based on the existing and future scenarios post-development. SIDRA
 result summary is shown in Table 6.1 for all modelled scenarios. The key findings were
 identified within the traffic analysis:
 - Both roundabouts are operating under the practical capacity (DoS < 0.85) with LoS A for all modelled scenarios.
 - No excessive queuing is observed at both roundabouts for all modelled scenarios.
 - The queuing from Wyattville Drive northeast approach has no disruption to the upstream wombat crossing in all modelled scenarios.

Table 6.1: SIDRA result summary

Greenway Drive / Wyattville Drive / Parking Access roundabout

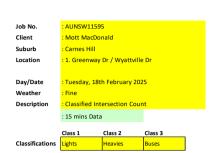
		AM Peal	k Hour			PM Peal	k Hour	
Scenario	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)	DoS	Avg. Delay (s)	LoS	95%ile Queue (m)
2025 Base Case	0.41	5	А	20	0.29	4	А	13
2026 Future Case	0.48	6	А	28	0.32	5	А	13

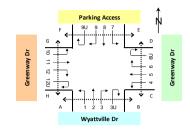
Chapman Street / Wyattville Drive roundabout

		AM Peal	k Hour			PM Peal	k Hour	
Scenario	DoS	Avg. Delay (s)	DoS	Avg. Delay (s)	DoS	Avg. Delay (s)	DoS	Avg. Delay (s)
2025 Base Case	0.25	5	А	12	0.13	5	Α	6
2026 Future Case	0.27	5	Α	13	0.13	6	Α	6

Based on the presented findings it can be concluded that the proposed activity at Greenway Park Public School is not expected to introduce any significant traffic or transport impacts to the external road network.

A. Traffic Count Data







Approach								Wyatt	ville Dr															Green	way Dr							
Direction		Direc (Left				Direc (Thro				Direc (Right	tion 3 Turn)			Direct (U 1	ion 3U 'urn)			Direc (Left	tion 4 Turn)			Direc (Thro				Direc (Right	tion 6 :Turn)				tion 6U Turn)	
Time Period	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total
7:00 to 7:15	2	0	0	2	0	0	0	0	38	0	0	38	0	0	0	0	7	2	0	9	20	1	3	24	1	0	0	1	1	0	0	1
7:15 to 7:30	3	0	0	3	0	0	0	0	42	0	0	42	1	0	0	1	8	0	0	8	18	0	2	20	0	0	0	0	0	0	0	0
7:30 to 7:45	6	0	0	6	1	0	0	1	51	1	0	52	0	0	0	0	6	0	0	6	39	0	2	41	0	0	0	0	1	0	0	1
7:45 to 8:00	3	0	0	3	0	0	0	0	36	1	0	37	1	0	0	1	13	0	0	13	46	0	0	46	0	0	0	0	0	0	0	0
8:00 to 8:15	11	0	0	11	1	0	0	1	50	0	0	50	1	0	0	1	12	0	0	12	77	1	5	83	2	0	0	2	0	0	0	0
8:15 to 8:30	10	0	0	10	2	0	0	2	55	1	0	56	0	0	0	0	23	0	0	23	84	0	4	88	1	0	0	1	1	0	0	1
8:30 to 8:45	12	0	0	12	0	0	0	0	69	1	0	70	0	0	0	0	52	1	0	53	46	0	1	47	0	0	0	0	1	0	0	1
8:45 to 9:00	13	0	0	13	0	0	0	0	84	2	2	88	1	0	0	1	30	0	0	30	42	0	2	44	1	0	0	1	1	0	0	1
9:00 to 9:15	6	0	0	6	0	0	0	0	41	0	0	41	0	0	0	0	8	0	0	8	36	0	0	36	0	0	0	0	6	0	0	6
9:15 to 9:30	2	0	0	2	0	0	0	0	29	0	0	29	0	0	0	0	16	1	0	17	33	0	2	35	2	0	0	2	5	0	0	5
9:30 to 9:45	2	0	0	2	0	0	0	0	25	1	0	26	0	0	0	0	13	0	0	13	31	0	0	31	1	0	0	1	10	0	1	11
9:45 to 10:00	0	0	0	0	0	0	0	0	10	0	0	10	0	0	0	0	9	0	0	9	21	0	0	21	1	1	0	2	13	1	1	15
AM Totals	70	0	0	70	4	0	0	4	530	7	2	539	4	0	0	4	197	4	0	201	493	2	21	516	9	1	0	10	39	1	2	42
14:00 to 14:15	2	0	0	2	0	0	0	0	28	0	0	28	0	0	0	0	22	1	0	23	39	1	1	41	3	0	0	3	2	0	0	2
14:15 to 14:30	4	1	0	5	0	0	0	0	22	0	0	22	1	0	0	1	27	0	0	27	46	0	1	47	3	0	0	3	1	0	0	1
14:30 to 14:45	6	0	0	6	2	0	0	2	15	0	0	15	0	0	0	0	45	0	0	45	64	1	0	65	4	0	0	4	1	1	0	2
14:45 to 15:00	1	0	0	1	0	0	0	0	14	0	0	14	0	0	0	0	37	0	0	37	70	0	2	72	2	0	0	2	3	0	0	3
15:00 to 15:15	23	0	0	23	2	0	0	2	76	0	0	76	0	0	0	0	20	1	0	21	56	0	2	58	4	0	0	4	0	0	0	0
15:15 to 15:30	2	0	0	2	0	0	0	0	24	1	0	25	0	0	0	0	27	1	0	28	56	1	2	59	3	0	0	3	1	0	0	1
15:30 to 15:45	2	0	0	2	0	0	0	0	23	0	0	23	0	0	0	0	24	0	0	24	69	1	1	71	4	0	0	4	2	0	0	2
15:45 to 16:00	1	0	0	1	1	0	0	1	19	0	0	19	0	0	0	0	25	1	0	26	61	2	3	66	1	0	0	1	3	0	0	3
16:00 to 16:15	3	0	0	3	0	0	0	0	23	0	0	23	0	0	0	0	26	0	0	26	42	2	2	46	1	0	0	1	2	0	0	2
16:15 to 16:30	4	0	0	4	0	0	0	0	27	1	0	28	0	0	0	0	34	1	0	35	71	0	1	72	4	0	0	4	1	0	0	1
16:30 to 16:45	3	0	0	3	0	0	0	0	26	0	0	26	1	0	0	1	31	0	0	31	57	0	2	59	7	0	0	7	3	0	0	3
16:45 to 17:00	2	0	1	3	1	0	0	1	21	1	0	22	1	0	0	1	33	0	0	33	61	0	1	62	3	0	0	3	1	0	0	1
17:00 to 17:15	2	0	0	2	0	0	0	0	26	0	0	26	0	0	0	0	25	0	0	25	56	0	2	58	1	0	0	1	7	0	0	7
17:15 to 17:30	2	0	0	2	0	0	0	0	25	0	0	25	1	0	0	1	30	0	0	30	58	1	2	61	3	0	0	3	4	0	0	4
17:30 to 17:45	0	0	0	0	0	0	0	0	20	0	0	20	0	0	0	0	23	0	0	23	57	0	3	60	0	0	0	0	1	0	0	1
17:45 to 18:00	2	0	0	2	0	0	0	0	29	0	0	29	0	0	0	0	20	0	0	20	61	1	2	64	5	0	0	5	2	0	0	2
PM Totals	59	1	1	61	6	0	0	6	418	3	0	421	4	0	0	4	449	5	0	454	924	10	27	961	48	0	0	48	34	1	0	35

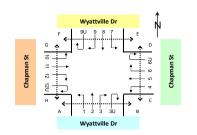
Approach								Parkin	g Acces	s														Greenv	vay Dr																
		Direct	ion 7		l I	Direc	tion 8			Direct	tion 9		1	Direct	ion 9U			Direct	ion 10			Direct			-	Direct	ion 12			Directi	on 12U						Crossin _i edestria				
Direction		(Left	Turn)			(Thr	ough)			(Right	Turn)			(U 1	Turn)			(Left	Turn)			(Thro	ugh)			(Right	Turn)			(U T	urn)										
Time Period	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 7:15	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	66	1	2	69	3	0	0	3	0	0	0	0	0	0	0	0	5	6	1	0	12
7:15 to 7:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57	0	2	59	1	0	0	1	0	0	0	0	1	0	2	0	2	3	1	0	9
7:30 to 7:45	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	0	2	79	8	0	0	8	0	0	0	0	0	0	0	0	1	3	2	0	6
7:45 to 8:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	1	2	96	4	0	0	4	1	0	0	1	0	0	0	0	4	2	1	0	7
8:00 to 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	110	1	2	113	2	0	0	2	2	0	0	2	0	1	0	0	1	0	0	1	3
8:15 to 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	2	102	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2	4	6
8:30 to 8:45	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	100	1	3	104	1	0	0	1	0	0	0	0	0	0	0	0	4	3	3	3	13
8:45 to 9:00	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	52	0	1	53	11	0	0	11	0	0	0	0	0	0	0	0	4	0	3	0	7
9:00 to 9:15	3	0	0	3	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	2	56	0	1	57	3	0	0	3	0	0	0	0	0	0	0	0	5	3	0	0	8
9:15 to 9:30	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	43	0	2	45	0	0	0	0	0	0	0	0	0	0	0	0	3	1	2	1	7
9:30 to 9:45	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	21	0	1	22	1	0	0	1	0	0	0	0	0	0	0	0	5	5	1	2	13
9:45 to 10:00	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	39	0	1	40	1	0	0	1	0	0	0	0	0	0	0	0	3	4	1	6	14
AM Totals	10	1	0	11	2	0	0	2	2	0	0	2	0	0	0	0	7	1	0	8	814	4	21	839	37	0	0	37	3	0	0	3	1	1	2	0	37	30	17	17	105
14:00 to 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	1	1	41	3	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	3
14:15 to 14:30	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	60	0	1	61	8	1	0	9	0	0	0	0	0	0	0	0	0	3	1	1	5
14:30 to 14:45	4	0	0	4	3	0	0	3	0	0	0	0	0	0	0	0	0	1	0	1	37	0	2	39	8	1	0	9	0	0	0	0	0	0	0	0	2	1	0	0	3
14:45 to 15:00	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	33	1	0	34	3	0	0	3	1	0	0	1	4	0	6	1	2	0	2	5	20
15:00 to 15:15	7	0	0	7	4	1	0	5	1	0	0	1	0	0	0	0	1	0	0	1	107	0	2	109	1	0	0	1	1	0	0	1	1	0	0	0	18	4	17	1	41
15:15 to 15:30	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	0	2	60	3	0	0	3	0	0	0	0	0	0	0	0	2	1	0	2	5
15:30 to 15:45	2	0	0	2	1	0	0	1	1	0	0	1	0	0	0	0	1	0	0	1	55	0	2	57	0	0	0	0	1	0	0	1	0	1	1	1	1	2	3	0	9
15:45 to 16:00	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	41	0	4	45	3	0	0	3	2	0	0	2	0	0	0	0	9	0	0	1	10
16:00 to 16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	1	0	45	5	0	0	5	0	0	0	0	0	0	0	0	0	1	1	0	2
16:15 to 16:30	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	40	0	2	42	1	0	0	1	0	0	0	0	1	0	1	0	4	0	0	0	6
16:30 to 16:45	3	0	0	3	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	49	1	4	54	2	0	0	2	0	0	0	0	0	0	0	0	2	0	1	0	3
16:45 to 17:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	40	0	1	41	3	0	0	3	0	0	0	0	0	0	0	0	2	1	1	0	4
17:00 to 17:15	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0	4	50	3	0	0	3	0	0	0	0	0	0	0	0	3	2	0	1	6
17:15 to 17:30	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	48	0	1	49	6	0	0	6	0	0	0	0	0	0	0	0	3	1	1	0	5
17:30 to 17:45	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	35	1	4	40	0	0	0	0	0	0	0	0	0	2	2	0	5	5	0	0	14
17:45 to 18:00	8	0	0	8	1	0	0	1	4	0	0	4	0	0	0	0	3	0	0	3	47	0	2	49	2	0	0	2	0	0	0	0	0	0	0	0	1	1	2	0	4
PM Totals	41	0	0	41	11	1	0	12	9	0	0	9	0	0	0	0	11	1	0	12	779	5	32	816	51	2	0	53	5	0	0	5	6	3	10	2	54	25	29	11	140

Job No. : AUNSW11595
Client : Mott MacDonald
Suburb : Carnes Hill
Location : 2.

Mivatt

Day/Date : Wednesday, 12th February 2025
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

Class 1 Class 2 Class 3
Classifications Lights Heavies Buses





Approach								Wyatt	ville Dr															Chap	man St							
Direction		Direc (Left				Direc (Thre	tion 2 ough)			Direc (Right	tion 3 Turn)			Direct (U T				Direct (Left				Direc (Thro					tion 6 t Turn)			Direct (U T	ion 6U 'urn)	
Time Period	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total
7:00 to 7:15	2	0	0	2	20	0	0	20	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	3	0	0	3	1	0	0	1
7:15 to 7:30	3	0	0	3	18	0	0	18	2	0	0	2	0	0	0	0	3	0	0	3	0	0	0	0	7	0	0	7	0	0	0	0
7:30 to 7:45	0	0	0	0	33	1	0	34	4	0	0	4	0	0	0	0	2	0	0	2	0	0	0	0	8	0	0	8	0	0	0	0
7:45 to 8:00	8	0	0	8	15	0	0	15	2	0	0	2	0	0	0	0	4	0	0	4	0	0	0	0	6	0	0	6	0	0	0	0
8:00 to 8:15	7	0	0	7	33	0	0	33	3	0	0	3	0	0	0	0	3	0	0	3	0	0	0	0	11	0	0	11	0	0	0	0
8:15 to 8:30	9	0	0	9	63	0	0	63	5	0	0	5	0	0	0	0	5	0	0	5	0	0	0	0	6	0	0	6	0	0	0	0
8:30 to 8:45	23	0	0	23	70	0	0	70	8	0	0	8	1	0	0	1	15	0	0	15	2	0	0	2	2	0	0	2	2	0	0	2
8:45 to 9:00	21	1	0	22	51	0	0	51	3	0	0	3	1	0	0	1	18	0	0	18	7	0	0	7	12	0	0	12	1	0	0	1
9:00 to 9:15	3	1	0	4	12	0	0	12	4	0	0	4	0	0	0	0	8	0	0	8	1	0	0	1	7	0	0	7	0	0	0	0
9:15 to 9:30	0	0	0	0	12	0	0	12	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	4	0	0	4	0	0	0	0
9:30 to 9:45	1	0	0	1	18	0	0	18	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	2	0	0	0	0
9:45 to 10:00	1	0	0	1	20	0	0	20	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	1	0	0	1	0	0	0	0
AM Totals	78	2	0	80	365	1	0	366	33	0	0	33	2	0	0	2	62	0	0	62	11	0	0	11	69	0	0	69	4	0	0	4
14:00 to 14:15	2	0	0	2	12	0	0	12	4	0	0	4	0	0	0	0	5	0	0	5	0	0	0	0	4	0	0	4	0	0	0	0
14:15 to 14:30	6	0	0	6	11	1	0	12	1	0	0	1	0	0	0	0	4	0	0	4	0	0	0	0	2	0	0	2	0	0	0	0
14:30 to 14:45	11	0	0	11	20	0	0	20	7	0	0	7	1	0	0	1	1	0	0	1	0	0	0	0	8	0	0	8	1	0	0	1
14:45 to 15:00	17	0	0	17	36	0	0	36	11	0	0	11	2	0	0	2	3	0	0	3	1	0	0	1	3	0	0	3	0	0	0	0
15:00 to 15:15	5	0	0	5	27	0	0	27	5	0	0	5	0	0	0	0	21	0	0	21	1	0	0	1	7	0	0	7	0	0	0	0
15:15 to 15:30	7	0	0	7	11	0	0	11	2	0	0	2	0	0	0	0	6	0	0	6	0	0	0	0	5	0	0	5	0	0	0	0
15:30 to 15:45	3	0	0	3	15	0	0	15	1	0	0	1	0	0	0	0	2	0	0	2	1	0	0	1	5	0	0	5	0	0	0	0
15:45 to 16:00	4	0	0	4	14	0	0	14	2	0	0	2	1	0	0	1	2	0	0	2	0	0	0	0	3	0	0	3	0	0	0	0
16:00 to 16:15	2	0	0	2	16	0	0	16	3	0	0	3	0	0	0	0	2	0	0	2	1	0	0	1	2	0	0	2	0	0	0	0
16:15 to 16:30	0	0	0	0	16	0	0	16	5	0	0	5	0	0	0	0	5	0	0	5	2	0	0	2	5	0	0	5	0	0	0	0
16:30 to 16:45	3	0	0	3	17	0	1	18	3	0	0	3	0	0	0	0	3	0	0	3	0	0	0	0	2	0	0	2	0	0	0	0
16:45 to 17:00	5	0	0	5	13	0	0	13	3	0	0	3	1	0	0	1	4	0	0	4	1	0	0	1	9	0	0	9	0	0	0	0
17:00 to 17:15	1	0	0	1	22	0	0	22	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	1	3	0	0	3	0	0	0	0
17:15 to 17:30	5	0	0	5	17	0	0	17	3	0	0	3	0	0	0	0	1	0	0	1	0	0	0	0	4	0	0	4	0	0	0	0
17:30 to 17:45	4	0	0	4	11	0	0	11	4	0	0	4	0	0	0	0	2	0	0	2	1	0	0	1	6	0	0	6	0	0	0	0
17:45 to 18:00	4	0	0	4	23	0	0	23	1	0	0	1	0	0	0	0	2	0	0	2	0	0	0	0	2	0	0	2	0	0	0	0
PM Totals	79	0	0	79	281	1	1	283	55	0	0	55	5	0	0	5	66	0	0	66	9	0	0	9	70	0	0	70	1	0	0	1

Approach								Wya	ttville D	r														Chap	man St												Crossin	g			
Direction		Direct (Left					ction 8 rough)				tion 9 t Turn)				ion 9U [urn]			Direct (Left				Direct (Thre				Direct (Right	ion 12 Turn)			Directi (U T							edestria				
Time Period	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	səsng	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	Lights	Heavies	Buses	Total	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 7:15	0	0	0	0	7	0	1	8	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	4
7:15 to 7:30	0	0	0	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	1	1	1	0	0	0	1	1	5
7:30 to 7:45	4	0	0	4	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	1	1	2
7:45 to 8:00	2	0	0	2	6	0	0	6	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	1	3
8:00 to 8:15	3	0	0	3	8	0	0	8	0	0	0	0	3	0	0	3	5	0	0	5	1	0	0	1	12	0	0	12	0	0	0	0	0	0	0	0	0	0	1	1	2
8:15 to 8:30	3	0	0	3	13	0	0	13	0	0	0	0	6	0	0	6	9	0	0	9	0	0	0	0	2	0	0	2	0	0	0	0	1	0	0	0	0	0	8	0	9
8:30 to 8:45	5	0	0	5	19	0	0	19	2	0	0	2	13	0	0	13	10	0	1	11	2	0	0	2	9	0	0	9	0	0	0	0	3	0	0	8	1	2	2	1	17
8:45 to 9:00	5	0	0	5	14	0	0	14	7	0	0	7	13	0	0	13	21	0	0	21	1	0	0	1	21	0	0	21	1	0	0	1	5	2	3	7	2	2	13	0	34
9:00 to 9:15	3	0	0	3	12	0	0	12	2	0	0	2	1	0	0	1	11	0	0	11	0	0	0	0	8	0	1	9	0	0	0	0	0	0	4	1	2	0	0	0	7
9:15 to 9:30	2	0	0	2	14	0	0	14	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	2
9:30 to 9:45	3	0	0	3	5	0	0	5	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	3
9:45 to 10:00	2	0	0	2	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2	5
AM Totals	32	0	0	32	117	0	1	118	12	0	0	12	36	0	0	36	62	0	1	63	7	0	0	7	66	0	1	67	1	0	0	1	10	4	12	19	5	4	31	8	93
14:00 to 14:15	4	0	0	4	13	0	0	13	3	0	0	3	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 to 14:30	2	0	0	2	10	2	0	12	5	0	0	5	1	0	0	1	2	0	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	2
14:30 to 14:45	7	0	0	7	7	0	0	7	4	0	0	4	4	0	0	4	3	0	0	3	0	0	0	0	5	0	0	5	0	0	0	0	0	1	0	0	0	0	0	0	1
14:45 to 15:00	4	0	0	4	2	0	0	2	6	0	0	6	4	0	0	4	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	6	0	0	2	0	6	7	0	21
15:00 to 15:15	5	0	0	5	43	0	0	43	4	0	0	4	7	0	0	7	14	0	0	14	2	0	0	2	39	0	0	39	0	0	0	0	0	15	7	1	18	0	6	13	60
15:15 to 15:30	6	0	0	6	19	0	0	19	5	0	0	5	1	0	0	1	0	0	0	0	0	0	0	0	4	0	1	5	1	0	0	1	0	0	0	0	0	0	1	1	2
15:30 to 15:45	5	0	0	5	20	0	0	20	1	0	0	1	1	0	0	1	1	0	0	1	2	0	0	2	4	0	1	5	0	0	0	0	0	0	1	0	1	2	0	0	4
15:45 to 16:00	5	0	0	5	8	1	0	9	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	1
16:00 to 16:15	3	0	0	3	13	0	0	13	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	3	0	0	3	0	0	0	0	0	0	0	0	0	1	2	0	3
16:15 to 16:30	7	0	0	7	19	1	0	20	2	0	0	2	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	0	0	4	5
16:30 to 16:45	7	0	0	7	20	0	1	21	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	3
16:45 to 17:00	1	0	0	1	14	0	0	14	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	1	0	0	0	0	1
17:00 to 17:15	7	0	0	7	22	0	0	22	2	0	0	2	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1
17:15 to 17:30	5	0	0	5	18	0	0	18	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2
17:30 to 17:45	5	0	0	5	15	0	0	15	1	0	0	1	1	0	0	1	1	0	0	1	0	0	0	0	2	0	0	2	0	0	0	0	1	0	2	0	0	0	1	2	6
17:45 to 18:00	0	0	0	0	13	0	0	13	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	1	0	0	0	0	0	0	2	3
PM Totals	73	0	0	73	256	4	1	261	37	0	0	37	20	0	0	20	30	0	0	30	6	0	0	6	74	0	2	76	2	0	0	2	8	17	11	7	19	11	18	24	115

B. SIDRA Modelling Results

USER REPORT FOR SITE

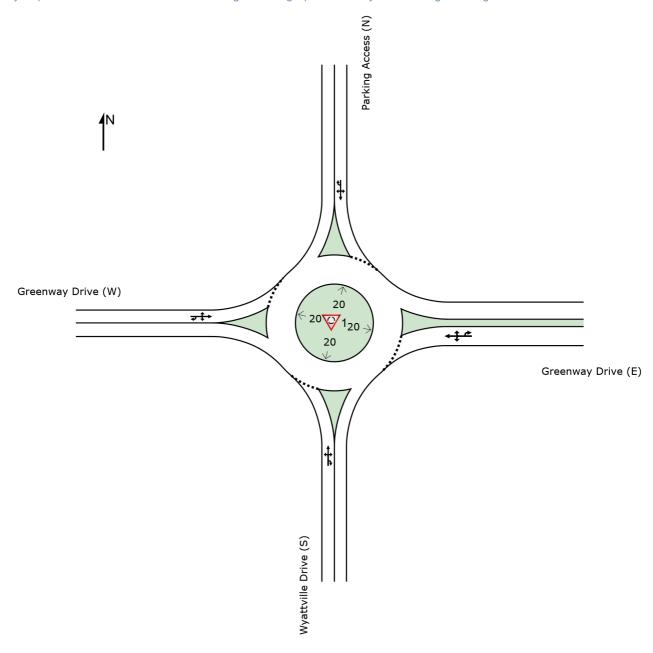
Project: Greenway Park PS

Output produced by SIDRA INTERSECTION Version: 9.1.2.202 Template: PDF Output

♥ Site: 1 [AM Greenway Dr / Wyatville Dr Roundabout (Site Folder: 2025 Base Case)]

AM Peak Hour: 7.00 – 8.00am SIDRA Version 9.1.2.202 Site Category: (None)

Roundabout



Lane Use	and P	erfor	mance												
	Dem Flo		Arrival	Flows	Сар.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% B: Que		Lane Config	Lane Length	Cap. F Adj. B	
	[Total veh/h	HV]	[Total veh/h	HV]	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
South: Wy	attville [Orive (S)												
Lane 1 ^d	332	1.9	332	1.9	989	0.335	100	9.1	LOSA	2.3	16.1	Full	300	0.0	0.0
Approach	332	1.9	332	1.9		0.335		9.1	LOSA	2.3	16.1				
East: Gree	enway D	rive (E	<u>:</u>)												
Lane 1 ^d	407	3.6	407	3.6	1515	0.269	100	3.0	LOSA	1.5	11.0	Full	267	0.0	0.0
Approach	407	3.6	407	3.6		0.269		3.0	LOSA	1.5	11.0				
North: Par	king Aco	cess (N	1)												
Lane 1 ^d	4	0.0	4	0.0	592	0.007	100	9.0	LOSA	0.0	0.3	Full	15	0.0	0.0
Approach	4	0.0	4	0.0		0.007		9.0	LOSA	0.0	0.3				
West: Gre	enway [Orive (\	N)												
Lane 1 ^d	414	2.5	414	2.5	960	0.431	100	5.6	LOSA	3.4	24.0	Full	406	0.0	0.0
Approach	414	2.5	414	2.5		0.431		5.6	LOSA	3.4	24.0				
All Vehicles	1157	2.7	1157	2.7		0.431		5.7	LOSA	3.4	24.0				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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.

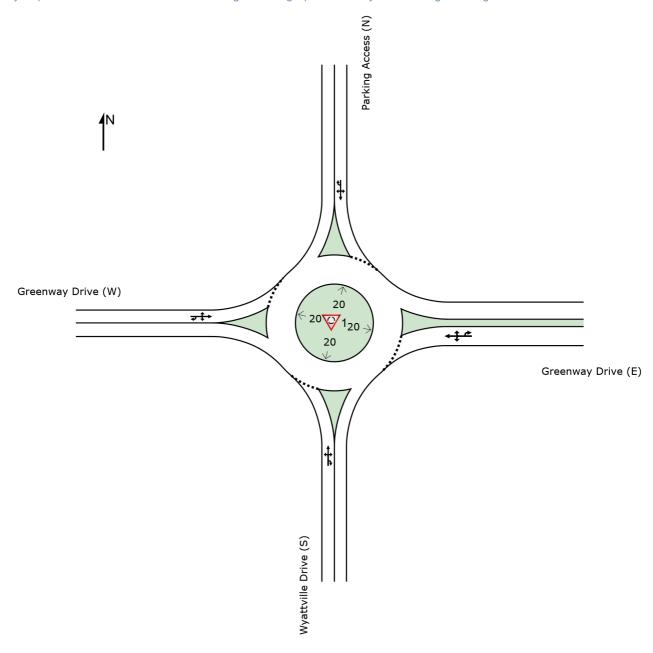
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

▼ Site: 1 [PM Greenway Dr / Wyatville Dr Roundabout (Site Folder: 2025 Base Case)]

PM Peak Hour: 14.30 – 15.30pm SIDRA Version 9.1.2.202

Site Category: (None) Roundabout



Lane Use	and P	erfor	mance												
	Demand Flows				Сар.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% B Que		Lane Config	Lane Length	Cap. F Adj. B	
	[Total veh/h	HV]	[Total veh/h	HV]	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
South: Wy	attville [Drive (S)												
Lane 1 ^d	176	0.6	176	0.6	996	0.177	100	8.4	LOSA	1.1	7.5	Full	300	0.0	0.0
Approach	176	0.6	176	0.6		0.177		8.4	LOSA	1.1	7.5				
East: Gree	nway D	rive (E	Ξ)												
Lane 1 ^d	425	2.7	425	2.7	1494	0.285	100	3.2	LOSA	1.5	10.6	Full	267	0.0	0.0
Approach	425	2.7	425	2.7		0.285		3.2	LOSA	1.5	10.6				
North: Par	king Aco	cess (N	۷)												
Lane 1 ^d	28	3.7	28	3.7	780	0.036	100	4.7	LOSA	0.2	1.5	Full	15	0.0	0.0
Approach	28	3.7	28	3.7		0.036		4.7	LOSA	0.2	1.5				
West: Gre	enway [Orive (\	W)												
Lane 1 ^d	276	3.4	276	3.4	1116	0.247	100	4.3	LOSA	1.7	12.1	Full	406	0.0	0.0
Approach	276	3.4	276	3.4		0.247		4.3	LOS A	1.7	12.1				
All Vehicles	905	2.6	905	2.6		0.285		4.6	LOSA	1.7	12.1				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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).

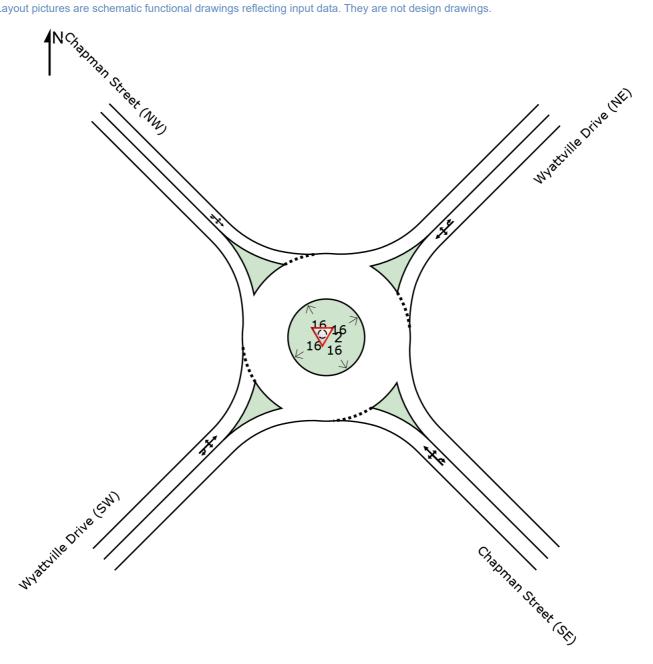
 $\label{eq:hv} \mbox{HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.}$

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

d Dominant lane on roundabout approach



AM Peak Hour: 7.00 – 8.00am SIDRA Version 9.1.2.202 Site Category: (None) Roundabout



Lane Use	and F	erfori	mance												
	Dem Flo	WS	Arrival		Сар.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Ba Que	ue	Lane Config	Lane Length	Cap. F Adj. B	
	[Total veh/h	HV] %	[Total veh/h	HV] %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
SouthEast	: Chapr	nan St	reet (SE	Ξ)											
Lane 1 ^d	88	0.0	88	0.0	1137	0.078	100	5.7	LOSA	0.4	3.0	Full	136	0.0	0.0
Approach	88	0.0	88	0.0		0.078		5.7	LOSA	0.4	3.0				
NorthEast:	Wyattv	ille Dri	ve (NE))											
Lane 1 ^d	120	0.0	120	0.0	1179	0.102	100	5.7	LOSA	0.6	4.4	Full	70	0.0	0.0
Approach	120	0.0	120	0.0		0.102		5.7	LOSA	0.6	4.4				
NorthWest	: Chapr	nan St	reet (N\	N)											
Lane 1 ^d	100	1.1	100	1.1	864	0.116	100	7.8	LOSA	0.7	5.2	Full	455	0.0	0.0
Approach	100	1.1	100	1.1		0.116		7.8	LOSA	0.7	5.2				
SouthWes	t: Wyatt	ville D	rive (SV	V)											
Lane 1 ^d	315	0.3	315	0.3	1260	0.250	100	4.2	LOSA	1.7	11.8	Full	432	0.0	0.0
Approach	315	0.3	315	0.3		0.250		4.2	LOS A	1.7	11.8				
All Vehicles	623	0.3	623	0.3		0.250		5.3	LOSA	1.7	11.8				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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).

 $\label{eq:hv} \mbox{HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.}$

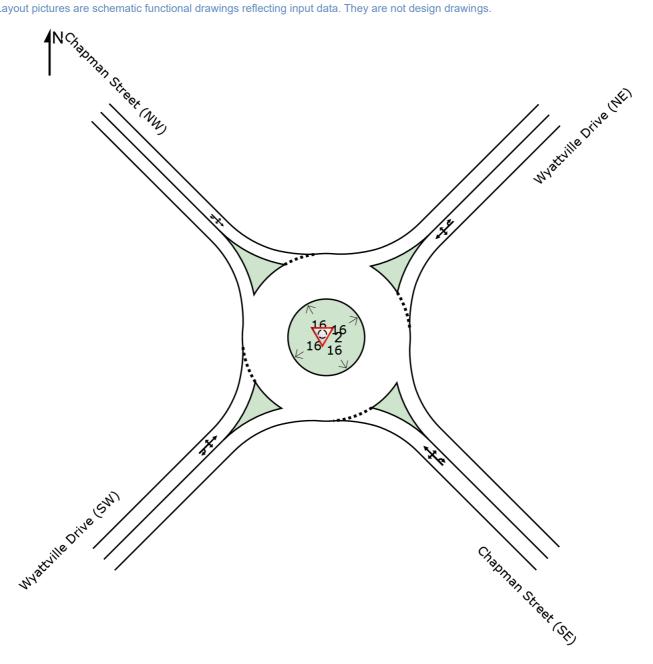
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

▼ Site: 2 [PM Chapman St / Wyatville Dr Roundabout (Site Folder: 2025 Base Case)]

PM Peak Hour: 14.30 – 15.30pm SIDRA Version 9.1.2.202

Site Category: (None) Roundabout



Lane Use	and P	erfor	mance												
	Demand Flows				Сар.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Βε Que		Lane Config	Lane Length	Cap. F Adj. B	
	[Total veh/h	HV] %	[Total veh/h	HV] %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
SouthEast	: Chapn	nan St	reet (SE	Ξ)											
Lane 1 ^d	60	0.0	60	0.0	1118	0.054	100	5.8	LOSA	0.3	2.0	Full	136	0.0	0.0
Approach	60	0.0	60	0.0		0.054		5.8	LOSA	0.3	2.0				
NorthEast:	Wyattv	ille Dri	ive (NE))											
Lane 1 ^d	135	0.0	135	0.0	1162	0.116	100	5.0	LOSA	0.7	4.9	Full	70	0.0	0.0
Approach	135	0.0	135	0.0		0.116		5.0	LOSA	0.7	4.9				
NorthWest	: Chapr	man St	reet (N	W)											
Lane 1 ^d	77	1.4	77	1.4	1022	0.075	100	7.4	LOSA	0.5	3.3	Full	455	0.0	0.0
Approach	77	1.4	77	1.4		0.075		7.4	LOSA	0.5	3.3				
SouthWes	t: Wyatt	ville D	rive (SV	V)											
Lane 1 ^d	171	0.0	171	0.0	1276	0.134	100	4.3	LOSA	0.8	5.6	Full	432	0.0	0.0
Approach	171	0.0	171	0.0		0.134		4.3	LOSA	0.8	5.6				
All Vehicles	442	0.2	442	0.2		0.134		5.3	LOSA	0.8	5.6				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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).

 $\label{eq:hv} \mbox{HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.}$

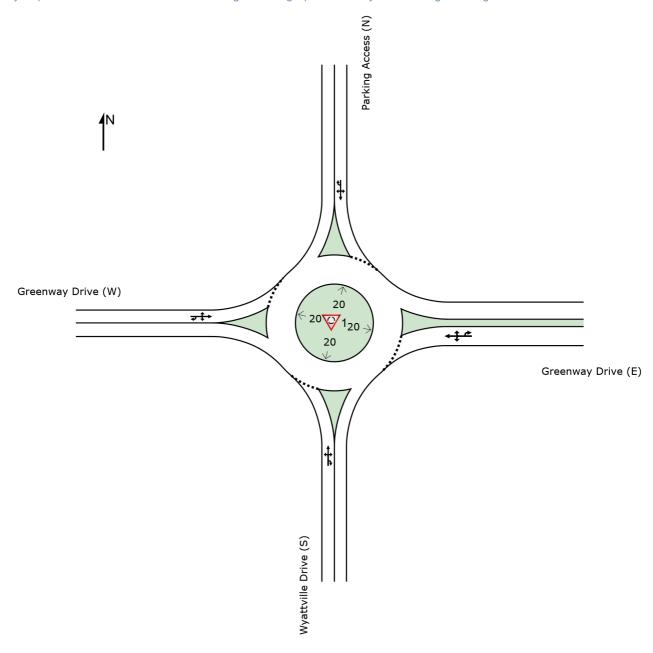
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

▼ Site: 1 [AM Greenway Dr / Wyatville Dr Roundabout (Site Folder: 2026 Future Case)]

AM Peak Hour: 7.00 – 8.00am SIDRA Version 9.1.2.202 Site Category: (None)

Roundabout



Lane Use and Performance															
	Demand Flows				Сар.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	Queue		Lane Config	Lane Length	Cap. F Adj. B	
	[Total veh/h	HV]	[Total veh/h	HV]	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
South: Wy	attville [Orive (S)												
Lane 1 ^d	332	1.9	332	1.9	980	0.338	100	9.1	LOSA	2.3	16.3	Full	300	0.0	0.0
Approach	332	1.9	332	1.9		0.338		9.1	LOSA	2.3	16.3				
East: Gree	enway D	rive (E	Ξ)												
Lane 1 ^d	416	3.5	416	3.5	1517	0.274	100	3.0	LOSA	1.6	11.4	Full	267	0.0	0.0
Approach	416	3.5	416	3.5		0.274		3.0	LOSA	1.6	11.4				
North: Par	king Aco	cess (N	۷)												
Lane 1 ^d	4	0.0	4	0.0	552	0.008	100	9.6	LOSA	0.0	0.3	Full	15	0.0	0.0
Approach	4	0.0	4	0.0		0.008		9.6	LOS A	0.0	0.3				
West: Gre	enway [Orive (\	W)												
Lane 1 ^d	468	2.2	468	2.2	969	0.483	100	5.7	LOSA	4.0	28.2	Full	406	0.0	0.0
Approach	468	2.2	468	2.2		0.483		5.7	LOSA	4.0	28.2				
All Vehicles	1220	2.6	1220	2.6		0.483		5.7	LOSA	4.0	28.2				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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).

 $\label{eq:hv} \mbox{HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.}$

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

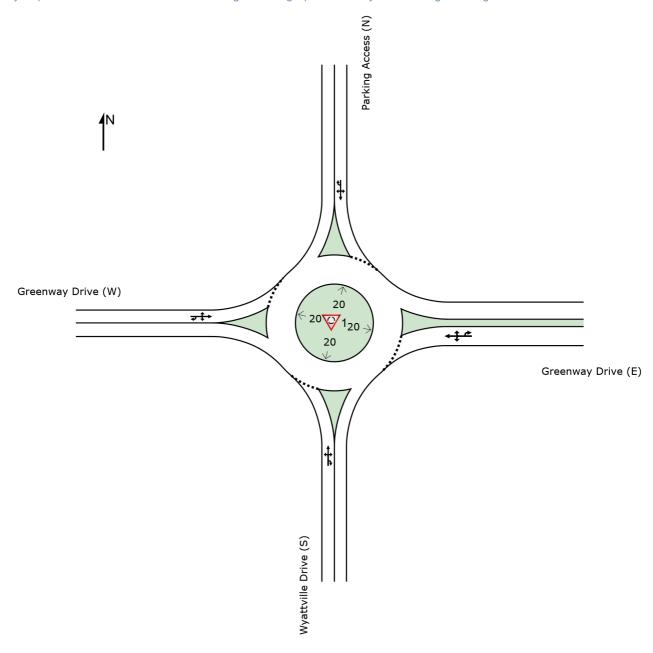
d Dominant lane on roundabout approach

▼ Site: 1 [PM Greenway Dr / Wyatville Dr Roundabout (Site Folder: 2026 Future Case)]

PM Peak Hour: 14.30 – 15.30pm SIDRA Version 9.1.2.202

SIDRA Version 9.1.2.202 Site Category: (None)

Roundabout



Lane Use	and F	erfor	mance												
	Dem Flo	WS	Arrival		Сар.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Βε Que	eue	Lane Config	Lane Length	Cap. F Adj. B	
	[Total veh/h	нv ј %	[Total veh/h	нv ј %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
South: Wy	attville l	Drive (S)												
Lane 1 ^d	176	0.6	176	0.6	954	0.184	100	8.8	LOSA	1.1	7.8	Full	300	0.0	0.0
Approach	176	0.6	176	0.6		0.184		8.8	LOSA	1.1	7.8				
East: Gree	nway D	rive (E	Ξ)												
Lane 1 ^d	474	2.4	474	2.4	1505	0.315	100	3.1	LOSA	1.7	12.1	Full	267	0.0	0.0
Approach	474	2.4	474	2.4		0.315		3.1	LOSA	1.7	12.1				
North: Par	king Ac	cess (N	۷)												
Lane 1 ^d	28	3.7	28	3.7	774	0.037	100	4.8	LOSA	0.2	1.5	Full	15	0.0	0.0
Approach	28	3.7	28	3.7		0.037		4.8	LOSA	0.2	1.5				
West: Gree	enway [Orive (\	W)												
Lane 1 ^d	283	3.3	283	3.3	1118	0.253	100	4.3	LOSA	1.7	12.6	Full	406	0.0	0.0
Approach	283	3.3	283	3.3		0.253		4.3	LOS A	1.7	12.6				
All Vehicles	961	2.4	961	2.4		0.315		4.6	LOSA	1.7	12.6				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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).

 $\label{eq:hv} \mbox{HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.}$

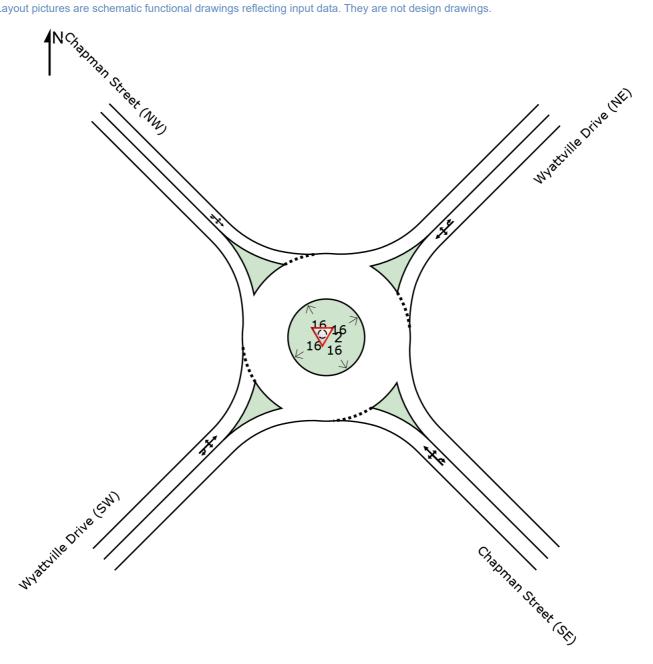
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach



AM Peak Hour: 7.00 – 8.00am SIDRA Version 9.1.2.202 Site Category: (None)

Roundabout



Lane Use	and P	erfor	mance												
	Dem Flo		Arrival	Flows	Сар.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% B Que		Lane Config	Lane Length	Cap. F Adj. B	
	[Total veh/h	HV]	[Total veh/h	HV]	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
SouthEast	: Chapn	nan St	reet (SE	Ξ)											
Lane 1 ^d	88	0.0	88	0.0	1137	0.078	100	5.7	LOSA	0.4	3.0	Full	136	0.0	0.0
Approach	88	0.0	88	0.0		0.078		5.7	LOSA	0.4	3.0				
NorthEast:	Wyattv	ille Dri	ive (NE))											
Lane 1 ^d	120	0.0	120	0.0	1179	0.102	100	5.7	LOSA	0.6	4.4	Full	70	0.0	0.0
Approach	120	0.0	120	0.0		0.102		5.7	LOSA	0.6	4.4				
NorthWest	: Chapr	nan St	reet (N	N)											
Lane 1 ^d	100	1.1	100	1.1	863	0.116	100	7.8	LOSA	0.7	5.2	Full	455	0.0	0.0
Approach	100	1.1	100	1.1		0.116		7.8	LOSA	0.7	5.2				
SouthWes	t: Wyatt	ville D	rive (SV	V)											
Lane 1 ^d	344	0.3	344	0.3	1267	0.272	100	4.1	LOSA	1.9	13.1	Full	432	0.0	0.0
Approach	344	0.3	344	0.3		0.272		4.1	LOS A	1.9	13.1				
All Vehicles	653	0.3	653	0.3		0.272		5.2	LOSA	1.9	13.1				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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.

d Dominant lane on roundabout approach

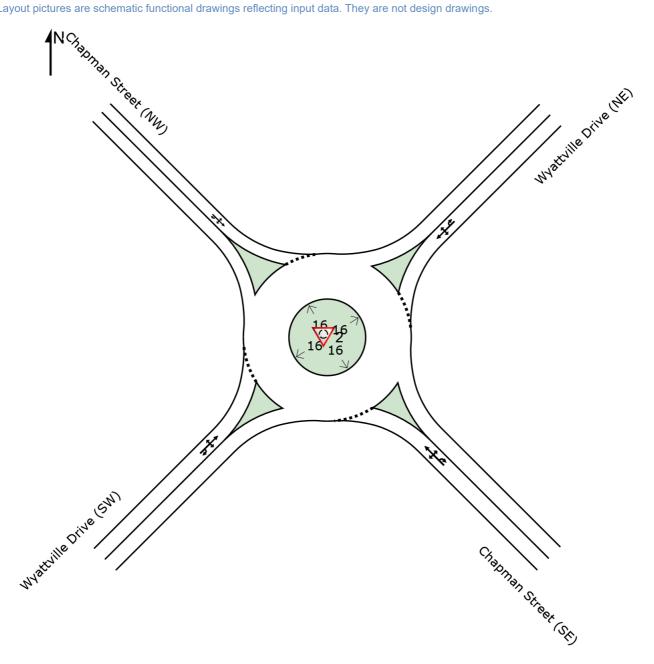
▼ Site: 2 [PM Chapman St / Wyatville Dr Roundabout (Site Folder: 2026 Future Case)]

PM Peak Hour: 14.30 – 15.30pm SIDRA Version 9.1.2.202

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Lane Use	and P	erfori	mance												
	Dem Flo [Total veh/h	WS	Arrival [Total veh/h		Cap.	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Ba Quel [Veh		Lane Config	Lane Length m	Cap. F Adj. B %	
SouthEast					VCII/II	VIC	/0	300			- '''			70	70
Lane 1 ^d	60	0.0	60	0.0	1091	0.055	100	6.0	LOSA	0.3	2.1	Full	136	0.0	0.0
Approach	60	0.0	60	0.0		0.055		6.0	LOSA	0.3	2.1				
NorthEast:	Wyattv	ille Dri	ve (NE)												
Lane 1 ^d	135	0.0	135	0.0	1111	0.121	100	5.2	LOSA	0.7	5.2	Full	70	0.0	0.0
Approach	135	0.0	135	0.0		0.121		5.2	LOSA	0.7	5.2				
NorthWest	: Chapr	nan St	reet (N\	V)											
Lane 1 ^d	103	1.0	103	1.0	1024	0.101	100	7.8	LOSA	0.6	4.5	Full	455	0.0	0.0
Approach	103	1.0	103	1.0		0.101		7.8	LOSA	0.6	4.5				
SouthWes	t: Wyatt	ville D	rive (SV	V)											
Lane 1 ^d	171	0.0	171	0.0	1276	0.134	100	4.3	LOSA	0.8	5.7	Full	432	0.0	0.0
Approach	171	0.0	171	0.0		0.134		4.3	LOSA	0.8	5.7				
All Vehicles	468	0.2	468	0.2		0.134		5.5	LOSA	0.8	5.7				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout 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.

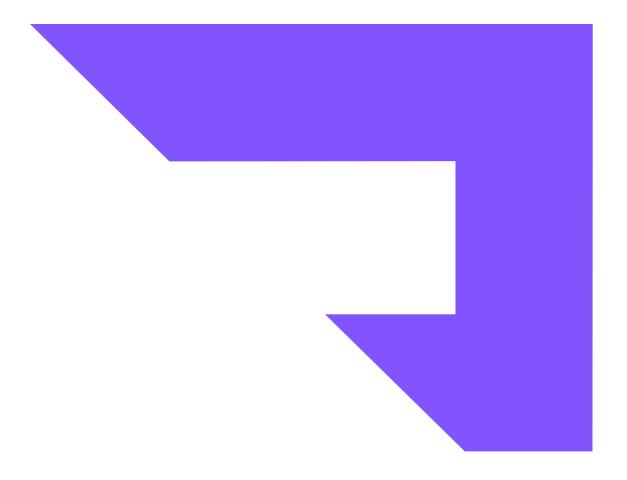
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

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C. Preliminary Construction Traffic and Pedestrian Management Plan





Greenway Park Public School upgrade and new public preschool

Preliminary Construction Traffic and Pedestrian Management Plan

April 2025

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Greenway Park Public School upgrade and new public preschool

Preliminary Construction Traffic and Pedestrian Management Plan

April 2025

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
Α	2025-04-09	W. Yang	M. Stephens	C. Roberts	First Draft
В	2025-04-15	W. Yang	M. Stephens	C. Roberts	Second Draft
С	2025-04-17	W. Yang	M. Stephens	C. Roberts	Final

Document reference: 703102073 | 2 | C

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Contents

1	Intro	1		
	1.1	Documentation Review		2
	1.2	Proposed Activity Descri	ption	2
	1.3	Activity Site		3
	1.4	Transport Context		3
	1.5	Report Scope		5
2	Exis	6		
	2.1	Site Location and Surrou	nding Road Network	6
	2.2	Existing Traffic Condition		7
		2.2.1 Walking		7
		2.2.2 Cycling		8
		2.2.3 Public Transpo	ort	9
3	Ove	view of Construction A	Activities	11
	3.1	11		
	3.2	Construction Activities		11
		3.2.1 Demolition act	ivities	11
		3.2.2 Construction a	activities	12
	3.3	Operation Hours		12
	3.4	Construction Vehicle		12
	3.5	Tower Cranes and Mobil	e Cranes	13
	3.6	Construction Site Access	S	13
	3.7	Construction Worker Par	king	14
4	Con	struction Management		15
	4.1	Road / Lane Closures		15
	4.2	Truck Layover Area		15
	4.3	Pedestrians and Cyclists		15
	4.4	Public Transport		15
	4.5	Site Induction		15
	4.6	Emergency Managemen	t	16
		4.6.1 Site Contact		16
		4.6.2 Emergency Ad	ccess	16
	4.7	Drivers' Code of Conduc		16
5	Traf	ic Control Measures		18
	5.1	Traffic Control Plan		18
	5.2 Traffic Control Signage			
		5 9		18

	5.3	Traffic Controllers	18
	5.4	Construction Vehicle Operation Restrictions	19
6	Mon	itoring and Review	20
	6.1	Site Inspections and Record Keeping	20
	6.2	Feedback Mechanisms	20
	6.3	Plan Review and Finalization	20
Tab	les		
Tabl	e 1.1: S	Summary of relevant section of the Part 5 Guidelines and EP&A Regulation.	1
Tabl	e 1.2: F	Plans and reports reviewed.	2
Tabl	e 2.1: S	Summary of surrounding road network	6
Table	e 2.2: E	Bus stops serving Greenway Park PS	10
Figu	ıres		
Figu	re 1.1:	Site and surrounds	4
Figu	re 1.2:	Proposed Greenway Park PS Masterplan	5
Figu	re 2.1:	Site Overview	6
Figu	re 2.2:	Footpath network surrounding Greenway Park Public School	8
Figu	re 2.3 (Greenway Park PS Cycle Network	9
Figu	re 2.4:	Bus stops serving Greenway Park PS	10
Figu	re 3.1:	Proposed construction site (in teal).	11
Figu	re 3.2:	Possible ingress and egress routes.	14

1 Introduction

This preliminary Construction Traffic and Pedestrian Management Plan (CTPMP) has been prepared to accompany a Review of Environmental Factors (REF) prepared for the Department of Education (DoE) relating to upgrades to Greenway Park Public School and new public preschool (the development) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (SEPPTI).

This document has been prepared in accordance with the *Guidelines for Division 5.1* assessments – Considerations of environmental health services facilities and schools, October 2024 (the Guidelines) by the Department of Planning, Housing and Infrastructure.

This report examines and takes into account the relevant environmental factors in the Guidelines and Section 170, 171 and Section 171A of the Environmental Planning and Assessment Regulations 2021 (EP&A Regulation) as outlined in Table 1.1,

Table 1.1: Summary of relevant section of the Part 5 Guidelines and EP&A Regulation.

Regulation / Guideline Section	Requirement	Response	Report Section
Guidelines for Division 5.1 Assessments: Consideration of environmental factors for health services facilities and schools	A1) Impact during construction – such as noise, vibration, traffic, construction vehicle routes, access and parking, pollution / dust, water and stormwater flow, sediment and run-off, waste removal, servicing arrangements, bushfire, flooding, contamination, other construction occuring in the area	This plan sets out mitigations for risks from construction activities, including possible construction vehicle routes, access and parking, and safety risks.	Throughout

This CTPMP also supports the School Transport Assessment, prepared by Mott MacDonald.

1.1 Documentation Review

The following plans / reports identified in Table 1.2 have been reviewed to inform the assessment contained within this report.

Table 1.2: Plans and reports reviewed.

Discipline	Document name	Revision	Date
Architecture (Fulton Trotter Architects)	GPPS-FTA-00-00- DR-A-1101	14	2025/4/17
Planning	Guidelines for Division 5.1 Assessments: Consideration of environmental factors for health services facilities and schools	1	2024/10

1.2 Proposed Activity Description

The proposed activity for the Greenway Park Public School upgrade includes:

1.2.1 Demolition

- Demolish part of the boundary fence on Chapman Street for new vehicular crossover;
- Demolish parts of the boundary fence on Chapman Street for new gates;
- Demolish shade structure and associated concrete slab and footpath;
- · Demolish footpaths;
- Tree removal;
- Trenching for underground services; and
- Earthworks associated with new buildings and landscaping.

1.2.2 Construction

- Construction and operation of single storey classroom building with associated covered walkways;
- Construction and operations of a new preschool building, included covered walkways, new car park (12 spaces and 1 (1) accessible space) and vehicular crossover to Chapman Street;
- Installation of art work on Block H and Block J façades, as well as a preschool retaining wall;
- Laying of services within trenches;
- · New pedestrian entry points;
- · Fencing and gates;
- Underground OSD tanks;
- Rainwater tanks;
- Shed for preschool;
- · Outdoor play equipment for the preschool;
- New fire hydrant booster & associated building services connections;

- Retaining walls associated with the preschool;
- Signage;
- · Landscaping; and
- Associated earthworks.

1.3 Activity Site

The activity site is located on Wyattville Drive, West Hoxton and is legally described as:

- Lot 11 DP 858025: and
- Lot 20 DP 867282.

The north-west and south-west frontages of the site are to Chapman Street and the southeastern frontage is to Wyattville Drive. The surrounding context of the site is predominantly low density residential as well as a childcare centre to the north.

1.4 Transport Context

Greenway Park PS is an existing primary school located in Hoxton Park, NSW, approximately 8km south-south-west of Liverpool CBD. The school is set within low-density suburban housing directly accessed by local streets Wyattville Drive and Chapman Street. The subject site is boarded by Greenway Drive on the north, Chapman Street on the south and west and Wyattville Drive on the east. The closest major road is Cowpasture Road, running north-south, approximately 300m east of the site, accessed via Greenway Drive as a collector road.

Greenway Park PS had rapid growth between 2005 and 2018 resulting in more demountable teaching spaces required to meet the past teaching space demands. However, enrolments have been gradually decreasing since 2019. The school currently has:

- 662 primary school student enrolments in 2023, expected to drop to 601 student enrolments in 2026¹;
- 65 total staff members after upgrade

The site, its immediate surrounds and school intake area are shown in Figure 1.1.

The proposed development to the school includes the following changes and has been assessed based on the year 2026:

- The addition of a pre-school with capacity for 60 students, ages 3-4, with an estimated 6 staff; and
- An associated car parking facility.

The replacement of the temporary classrooms with a new classroom building is like-for-like in terms of transport demand. The proposed masterplan of the project is shown in Figure 1.2.

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¹ Based on EagleEye system student projections

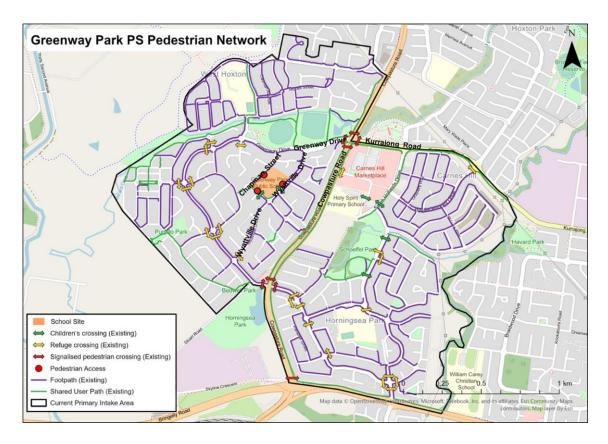


Figure 1.1: Site and surrounds

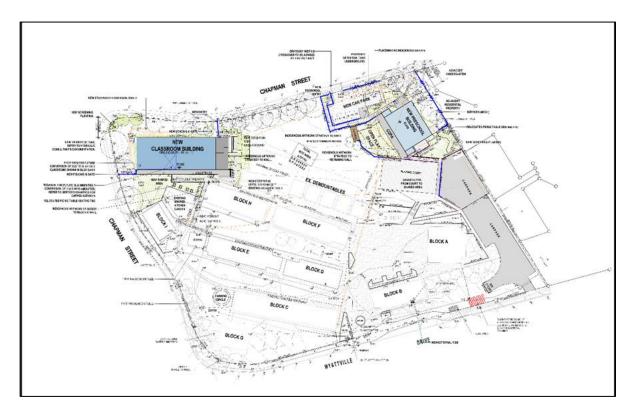


Figure 1.2: Proposed Greenway Park PS Masterplan²

1.5 Report Scope

The purpose of this Construction Traffic and Pedestrian Management Plan (CTPMP) is to mitigate the traffic disruption on the surrounding network and ensure the safety of all road users and construction workers during the construction of Greenway Park Public School Upgrade and New Public Preschool.

The scopes of works for this plan are as follow:

- Identify the potential construction impacts to the surrounding road networks and school operation.
- Outline the mitigation measures for construction disruption to ensure pedestrian and cyclist safety and efficient vehicle movements.
- Provide the guidance for construction vehicle access routing and temporary parking adjustment.
- Establish a framework for stakeholder communication and coordination.

² Source: GPPS-FTA-00-00-DR-A-1101 Revision 14 (Fulton Trotter Achitects, 2025/4/17)

2 Existing Condition

2.1 Site Location and Surrounding Road Network

Greenway Park PS is located in Hoxton Park, NSW, approximately 8km south-south-west of Liverpool CBD within the Liverpool City local government area (LGA). The school is set within low-density suburban housing boarded by Greenway Drive on the north, Chapman Street on the south and west and Wyattville Drive on the east as shown in Figure 2.1. The key roads in the local network are described in Table 2.1.



Figure 2.1: Site Overview³

Table 2.1: Summary of surrounding road network

Road Name	Classification	Speed Limit	Road Geometry	Parking Restrictions
Greenway Drive	Local road	50 km/h	Two-lane road, both directions, linemarked	Unrestricted parking; Parking bays available on eastbound direction
Chapman Street		50 km/h with		General unrestricted parking with no parking at bus zones in the south-west bound direction
	Local road	40 km/h school zone at the school west boundary	Two-lane road, both directions, no linemarking	No stopping in the north- eastbound direction during the school days
				No stopping and no parking at the northern boundary

703102073 | 2 | C | April 2025

³ Source: Nearmap – 28/01/25

Road Name	Classification	Speed Limit	Road Geometry	Parking Restrictions
Wyattville Drive	Local road	50 km/h with 40 km/h school zone	Two-lane road, both directions, linemarked	No parking at kiss and rides during school days – 8:00 to 9:30am, 2:30 to 4:00pm Parking in indented bays along the street, otherwise No Stopping.

2.2 Existing Traffic Conditions

2.2.1 Walking

Pedestrian network within the Greenway Park PS intake area is shown in Figure 2.2 below. There are footpaths along the frontage of the school that accommodate the three (3) school gates along Chapman Street and Wyattville Drive.

Chapman Street is located to the west and south of the school, with narrow footpaths around 1.2m wide at reasonable conditions, and Wyattville Drive is located to the east of the school, with shared user path (SUP) that are around 2m wide in good condition, as observed during the site visit. The site visits also observed pedestrian gaps in key areas that impede connectivity.

There are two children's crossing immediately outside the southern gates to the school. It was noted by the team during the site visit that the children's crossing on Wyattville Drive has a crossing supervisor and is well used by the students and parents, conversely the children's crossing on Chapman Street is unmarked and not supervised. Refuge crossing is provided around most roundabouts within the intake area, and signalised crossing across Cowpasture Road.

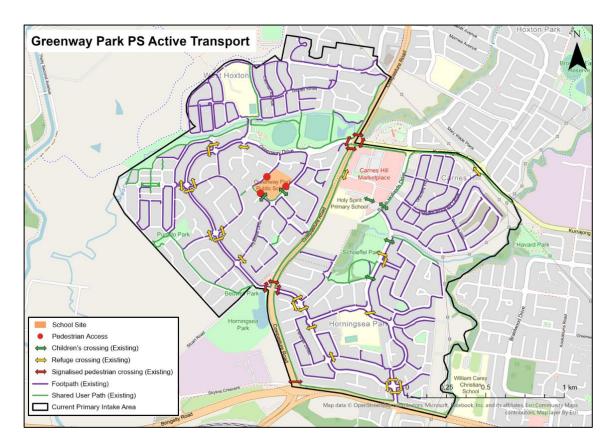


Figure 2.2: Footpath network surrounding Greenway Park Public School

2.2.2 Cycling

The cycling network around the school is underdeveloped and disconnected as shown in Figure 2.3. The school has a shared path running along its eastern and southern frontages, but these are isolated as the connecting cycleways through local streets in West Hoxton, Horningsea Park and Carnes Hill are mostly yet to be constructed. Further, the Regional Route 2 shown on Cowpasture Road is currently a narrow footpath with minimal separation from vehicular traffic; not an attractive cycling route for school-aged children. The West Hoxton Strategic Route and the Horningsea Park Strategic Route are reasonable quality and provide broader access to adjacent areas but are largely irrelevant to the small intake area of the primary school.

Children under the age of 16 years can ride on the footpath unless there is a "no bicycles" sign, however, pedestrian footpaths along Chapman Street and in West Hoxton generally are often too narrow to accommodate both pedestrian and cyclists.

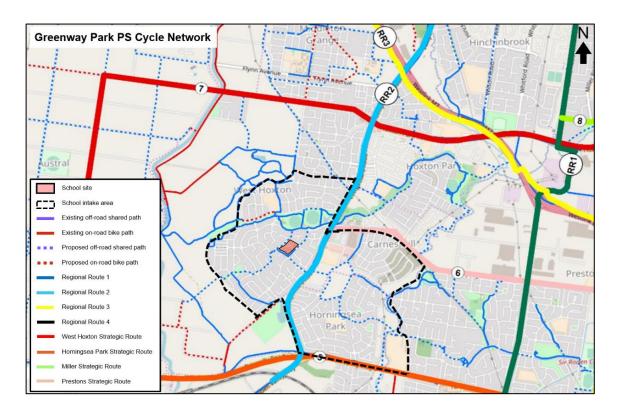


Figure 2.3 Greenway Park PS Cycle Network

Source: Liverpool Bike Plan 2018-2023

2.2.3 Public Transport

Greenway Park PS is served by public and school bus services at following three bus stops, as summarised in Figure 2.4 and illustrated in Table 2.2:

- TSN 2171474 Greenway Park Public School, Chapman Street (south-eastbound direction);
- TSN 2171290 Greenway Park, Greenway Drive (eastbound)
- TSN 2171372 Greenway Park, Greenway Drive (westbound)

Travel times were calculated assuming:

- A walking speed of 1.1m/s.
- A combined waiting and crossing time at signalised intersections of 1m.

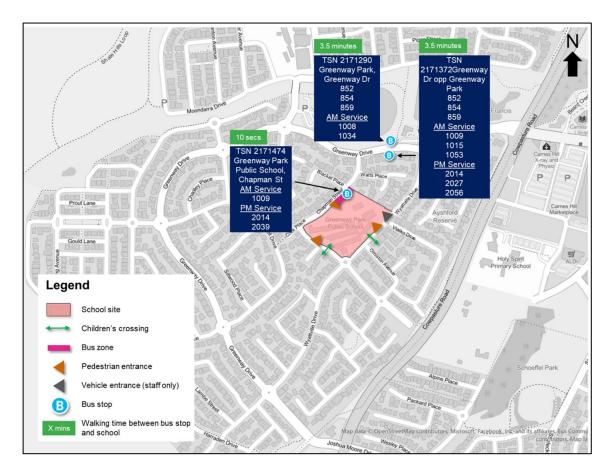


Figure 2.4: Bus stops serving Greenway Park PS

The public bus services to these stops during the AM School Peak (8:00-9:00) and the hour after the PM school bell 15:00-16:00) are further detailed in by number of services and their arrival times, revised as scheduled for Monday 9/3/2025. In summary, from the stops on Greenway Drive the school is serviced by:

- In the AM School Peak:
 - 4 northbound and 4 southbound services;
 - 2 eastbound services and 1 westbound service.
- In the PM School Peak:
 - 4 northbound and 4 southbound services;
 - 2 eastbound services and 1 westbound service.

Table 2.2: Bus stops serving Greenway Park PS

TSN	Name	Travel Time (mm:s)	Public Routes (no. services)	AM School Services	PM School Services
2171474	Greenway Park Public School, Chapman Street	00:10	N/A	1009 (1)	2014 (1) 2039 (1)
2171290	Greenway Park, Greenway Drive (eastbound)	03:30	852 (AM 1, PM 1) 854 (AM 1, PM 1) 859 (AM 4, PM 4)	1008 (1) 1034 (1)	N/A
2171372	Greenway Drive opp Greenway Park (westbound)	03:30	852 (AM 0, PM 1) 854 (AM 1, PM 0) 859 (AM 4, PM 4)	1009 (1) 1015 (1) 1053 (1)	2014 (1) 2027 (1) 2056 (1)

3 Overview of Construction Activities

3.1 Construction Site

The construction site is located on Wyattville Drive, West Hoxton and is legally described as:

- Lot 11 DP 858025; and
- Lot 20 DP 867282.

The north-west and south-west frontages of the site are to Chapman Street and the southeastern frontage is to Wyattville Drive. The surrounding context of the site is predominantly low density residential as well as a childcare centre to the north as shown in Figure 3.1.

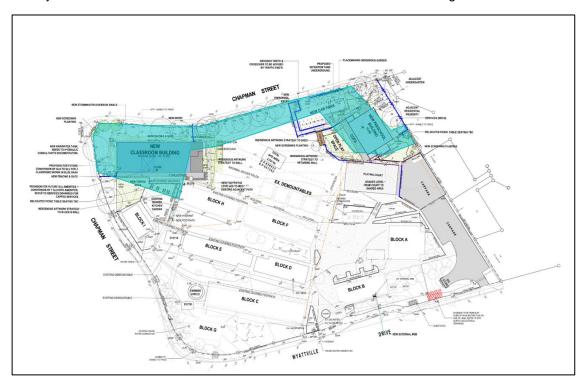


Figure 3.1: Proposed construction site (in teal).4

3.2 Construction Activities

The construction of the new pre-school and minor works is to be undertaken in a closed construction site along the western frontage of the school, as advised by SINSW and shown in Figure 3.1.

The proposed construction activities for the Greenway Park Public School upgrade are detailed in the following sections.

3.2.1 Demolition activities

- Demolish part of the boundary fence on Chapman Street for new vehicular crossover;
- Demolish parts of the boundary fence on Chapman Street for new gates;

⁴ Source: GPPS-FTA-00-00-DR-A-1102 Revision 14 (Fulton Trotter Achitects, 2025/4/17)

- Demolish shade structure and associated concrete slab and footpath;
- · Demolish footpaths;
- Tree removal;
- Trenching for underground services; and
- Earthworks associated with new buildings and landscaping.

3.2.2 Construction activities

- Construction and operation of single storey classroom building with associated covered walkways;
- Construction and operations of a new preschool building, included covered walkways, new car park (12 spaces and 1 (1) accessible space) and vehicular crossover to Chapman Street;
- Installation of art work on Block H and Block J façades, as well as a preschool retaining wall;
- Laying of services within trenches;
- New pedestrian entry points;
- Fencing and gates;
- Underground OSD tanks;
- Rainwater tanks;
- Shed for preschool;
- Outdoor play equipment for the preschool;
- New fire hydrant booster & associated building services connections;
- Retaining walls associated with the preschool;
- Signage;
- · Landscaping; and
- Associated earthworks.

3.3 Operation Hours

The typical construction work hours regulated by the NSW Environment Protection Authority (EPA) are summarised as follow to minimise the impacts to the local residents:

- Monday to Friday: 7am to 6pm;
- Saturday: 8am to 1pm;
- No construction work permitted during public holidays and on Sunday.

It is noted that the school bell time coincides with the above construction work hours. Heavy vehicle movements are suggested to be avoided during the traffic and public transport (PT) peak hours (e.g. 8:00-9:00 and 14:30-16:00) to eliminate the risk of pedestrian-vehicle collision.

3.4 Construction Vehicle

According to the construction activities listed in Section 3.2, the following types of construction heavy vehicles are likely to access the construction site associated with the spoil removal, concreate pouring and material delivery:

- · Excavators and bulldozers;
- Compactors and pavers;
- Loaders;
- · Dump trucks; and

· Rigid trucks.

Loading and unloading of vehicles will be undertaken onsite within the property boundaries. It is assumed that truck and dog trailer combinations and articulated vehicles would not be used due to the restricted access onto the local streets. Construction vehicles are likely to include:

- 6.4m Small rigid vehicles (SRV);
- 8.8m Medium rigid vehicles (MRV);
- 12.5m Heavy rigid vehicles (HRV) (the largest vehicle assumed to be accessing and egressing the site).

The contractor shall undertake swept paths to ensure the intended design vehicles are not likely to repeatedly impact kerbs or roundabouts. If the HRV vehicle is likely to do so, it may be required to limit to MRV and/or truck-and-dog vehicles.

These construction vehicles with general road access must comply with the dimension requirements and mass limits as per the requirements of National Heavy Vehicle Regulator.

Construction traffic volumes were not available at the time of assessment and a quantitative assessment was not possible.

3.5 Tower Cranes and Mobile Cranes

As the buildings to be constructed are only one storey, no lifting activities are required and no tower cranes or mobiles are expected to be used. Loading and unloading will occur within the construction site.

3.6 Construction Site Access

Deliveries to and removals from the site area expected to access and egress the site as follows:

Ingress

- Access from the broader road network is provided by Cowpasture Road and Kurrajong Road
- Access from the above state roads is provided by the signalised intersection of Cowpasture Road / Kurrajong Road (TCS 3931), with all movements and therefore approach from all directions possible:
 - From the northern approach (Cowpasture Road) into Greenway Drive: via a signalised right turn.
 - From The eastern approach (Kurrajong Road) into Greenway Drive: via the signalised through movement.
 - From the southern approach (Cowpasture Road) into Greenway Drive: via an unsignalized left slip lane.
- Access from Greenway Drive to Wyattville Drive is preferred, provided by a roundabout.
- Further access to the construction site access on Chapman Street is provided by the roundabout at Wyattville Drive / Chapman Street.
- Alternatively, the priority intersection at Greenway Drive / Chapman Street provides direct access to Chapman Street and the construction site access.

Egress

- It is assumed that vehicles will be able to turn around within the construction site, and egress from the proposed pre-school driveway onto Chapman Street in the forward direction.
- From Chapman Street, vehicles are expected to proceed to Greenway Drive via the giveway controlled right turn at the priority intersection of Greenway Drive / Chapman Street.

- Further Egress onto Cowpasture Road and Kurrajong Road is possible in all directions via the signalised intersection of Cowpasture Road / Kurrajong Road.
- Alternatively, if the priority intersection of Greenway Drive / Chapman Street is difficult, vehicles can egress from the driveway southbound down Chapman Street, then Wyattville Drive and Greenway Drive via the existing roundabouts.

Construction vehicles are assumed to entry and exits in a forward direction and no reverse movements are permitted within a public domain. The possible ingress and egress routes are illustrated in Figure 3.2.

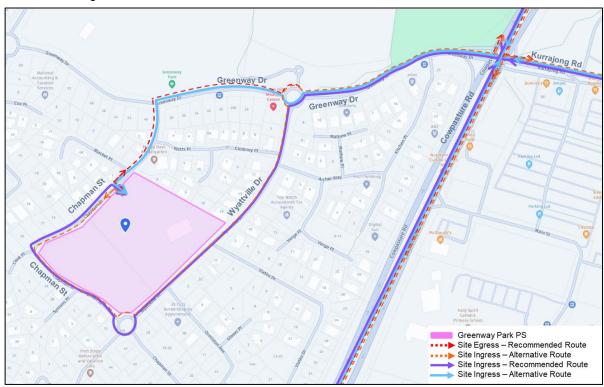


Figure 3.2: Possible ingress and egress routes.

3.7 Construction Worker Parking

There is no parking facility proposed within the construction site for worker use. Consequently, construction workers will seek on-street parking in the vicinity. Unrestricted on-street parking will be available along the surrounding local streets for the workers. All workers must be encouraged to utilise the ready public transport system existing in the vicinity of the site, or to carpool whereever possible.

4 Construction Management

4.1 Road / Lane Closures

The proposed construction work is not expected to require any road or lane closure.

4.2 Truck Layover Area

Loading and unloading activities shall occur on-site with sufficient layover spaces. Truck drivers shall be coordinated with site managers to ensure no truck queue on the local streets and minimize any impacts in the public domain. This may be particularly critical during concrete pours. The contractor shall consider these further once more detail is available.

4.3 Pedestrians and Cyclists

Construction works will have no occupation of the existing footpaths. All pedestrian and cyclist access will be maintained to the existing condition throughout the construction period. It is noted that construction vehicles will not be permitted to access / egress the construction site during the traffic and public transport peaks to reduce the exposure to the risk of pedestrian – vehicle collision.

Security fencing will be installed surrounding the construction site as an interface to ensure pedestrian safety. Traffic controllers will be present during vehicle movements in and out of the site to assist a safe and efficient travel of pedestrian and cyclists, especially during the school peaks. In addition, warning signage will be placed at a highly visible location near the site access point on Chapman Street to warn pedestrians and cyclists of the potential construction vehicle movements at footpath crossing points.

4.4 Public Transport

The construction activity would not impact the bus operation and the school bus stop location (TSN 2171474) in its current location. However, the construction site will prevent students from accessing the western gate onto Chapman Street. Instead, students will need to enter / exit via the southern gate on Chapman Street, extending their walk by ~190m. Additionally, the location of the proposed driveway is in this path; the risk of pedestrian – student at the driveway location during construction will be mitigated by:

- Excluding construction vehicle movements during the traffic and PT peaks;
- Posting a traffic controller to manage this location.

However, this driveway location will pose a risk after construction, and it is recommended to relocate the bus stop further south along Chapman Street.

4.5 Site Induction

All workers employed on-site shall be required to undergo a site induction. The following information to be provided includes as per the Workplace induction for construction workplaces – Information Sheet (Safe Work Australia, 20th March 2020)⁵:

Hazards and risks specified to the Greenway Park PS construction site;

⁵ Resource: Workplace Induction for Construction Workplaces: Information sheet

- Control and mitigation measures for the potential risks and hazards;
- Safety documents, policies and plans (e.g. CTPMP, Work Health and Safety);
- Site layout including the site entries and exits, loading and unloading zones, first aid and security requirement; and
- Incident, emergency and evacuation procedures and associated contact details

4.6 Emergency Management

4.6.1 Site Contact

Site contacts will be provided on the entrance information signs with the phone number and an email address for key personnels including the site supervisor, project manager and safety director. The contact details of local community representative are suggested to be provided to handle the enquires and complaints related to the traffic control measures, which would be reported and reviewed within the weekly coordination meeting.

4.6.2 Emergency Access

First aid will be provided on-site and emergency service access will be maintain to the existing conditions without any impacts by the proposed construction works. If the case, any emergency vehicle required for the construction site will enter from the Chapman Street entrance.

4.7 Drivers' Code of Conduct

The driver's Code of Conduct shall be implemented by all construction vehicle drivers to:

- Minimise the construction impact to the surrounding road network;
- Minimise the conflicts with other road users;
- · Minimise the road traffic noise; and
- Ensure the construction heavy vehicles follow the specific route.

The Code of Conduct for construction vehicles are detailed as follows:

- Drivers shall have the valid license and white card and be ready to present them on request.
- Drivers shall attend the site induction and ensure compliance to this CTPMP.
- Heavy vehicle movements shall be avoided during the peak hours (typically 8:00 9:30 and 14:30 16:00, covering both the observed traffic peak and the school egress period).
- Drivers will strictly adhere to the approved access / egress routes and the instruction of traffic controllers.
- Heavy vehicles shall travel within the posted speed outside and within the construction site, particularly the 40 km/h school zone restriction. Drivers have the responsibility to ensure the driving safety and reduce the driving speed when the driving visibility and condition are affected / changes.
- Extra caution shall be taken near the school crossings and where children are present.
- Delivery drivers not site inducted are to drop off to designated drop off areas only and are to be escorted by a fully inducted person.
- Heavy vehicles or unloaded materials shall not block the access or roadways or pedestrian footpaths.
- Heavy vehicles shall avoid reversing into or from the site where possible, and shall reverse
 under the guidance of a trained spotter or traffic controller.

- Drivers must ensure that all the loads are secured property throughout the travel journey and drivers shall ensure to remove the loose debris prior to the departure from the construction site.
- Heavy vehicles shall ensure that all wheels are cleaned free of mud prior to exiting site during or after rain.
- Drivers shall adhere to the noise control measures to minimize the disruption to the school and local community. All activities generating noises shall comply with the NSW EPA construction noise requirements.
- Drivers shall comply with the fatigue management requirements under *Heavy Vehicle* (*Fatigue Management*) *National Regulation* (*NSW*)⁶ defined maximum work requirement, minimum rest requirements and information included in work diary.
- Drivers are responsible to report any incidents and hazards immediately to site supervisor. Breaches of conduct must be required to documented and addressed promptly.

703102073 | 2 | C | April 2025

⁶ Resource: Heavy Vehicle (Fatigue Management) National Regulation (NSW) (2013 SI 245a) [NSW]

5 Traffic Control Measures

5.1 Traffic Control Plan

Traffic Control Plan (TCP) will be developed by the contractor in accordance with the Traffic Control at Work Sites manual issued by Transport for NSW (TfNSW)⁷ to ensure the safe interaction between construction vehicle and other road users.

The TCP shall include the following information:

- · Location of construction site and access points;
- Traffic control devices including signage size and location;
- · Speed limit requirements;
- Parking restriction (if required);
- · Construction vehicle ingress and egress movements; and
- Location of traffic controllers;

All traffic control devices shall comply with Australian Standard AS1742.3:2019 – Manual of Uniform Traffic Control Devices – Traffic control for works on roads.

5.2 Traffic Control Signage

Temporary traffic control signages will be placed by the contractor to adhere to the TCP and maintain throughout the construction period. All traffic control devices and arrangement should be inspected in the daily basis to ensure the visibility and adequacy. The traffic control signages will include the following elements (but not limited to):

- Work site approaches and departures: Roadwork Ahead and End Roadwork;
- Regulatory control of traffic: Speed limit signage and Prepare To Stop;
- Pedestrian control signs
- To indicate road conditions

5.3 Traffic Controllers

Construction ingress and egress movements should be undertaken under the supervision of the TfNSW authorised traffic controllers. The qualified traffic controllers should be stationed at the following locations to ensure the safe movements, especially during the traffic and PT peak hours (e.g. 8:00 - 9:30 and 14:30 - 16:00):

- Site access points;
- Pedestrian crossings near the construction site; and
- Intersection points between vehicles movements and pedestrians / cyclists.

A certified traffic controllers are also eligible to place the traffic control signage in accordance with the AS1742.

703102073 | 2 | C | April 2025

⁷ Resource: <u>Traffic Control at Work Sites - Transport Standards Portal</u>

5.4 Construction Vehicle Operation Restrictions

There are some restrictions applied to the construction vehicle operation:

- Construction vehicle movements shall not occur during school peak hours (8:00-9:30 and 14:30 16:00) to eliminate the risk of pedestrian-vehicle collision.
- Construction vehicles shall access / exit the site via the suggested routing devised from the Cowpasture Road / Kurrajong Drive intersection to limit the route through suburban streets.

6 Monitoring and Review

6.1 Site Inspections and Record Keeping

A structured monitoring program would be proceeded during the construction of Greenway Park Public School Upgrade and New Public Preschool to ensure the proper implementation of the Construction Management Plan. Site supervisor will undertake a regular inspection to:

- Ensure that traffic control devices and arrangements comply with the Traffic Control at Work Sites manual (TfNSW, 2022).
- Ensure the mitigation measures are in place and functioning as intended.

In addition, any identified issues (e.g. traffic congestion, unsafe behaviours and equipment failure) shall be promptly addressed and recorded. Weekly coordination meeting would be held within the construction team to review all identified issues and implement necessary adjustments accordingly.

6.2 Feedback Mechanisms

Feedback mechanism should be established and captured from all stakeholders including school staffs, parents, construction team and local communities. The feedback collection channels can include but not limited to online feedback form via school website and regular community meeting. All the feedback and concerns should be reviewed in the weekly meeting held by the construction management team and addressed and rectified promptly.

6.3 Plan Review and Finalization

A comprehensive review of the CTPMP shall be undertaken to evaluate its effectiveness and provide the improved management plan at the following project stages:

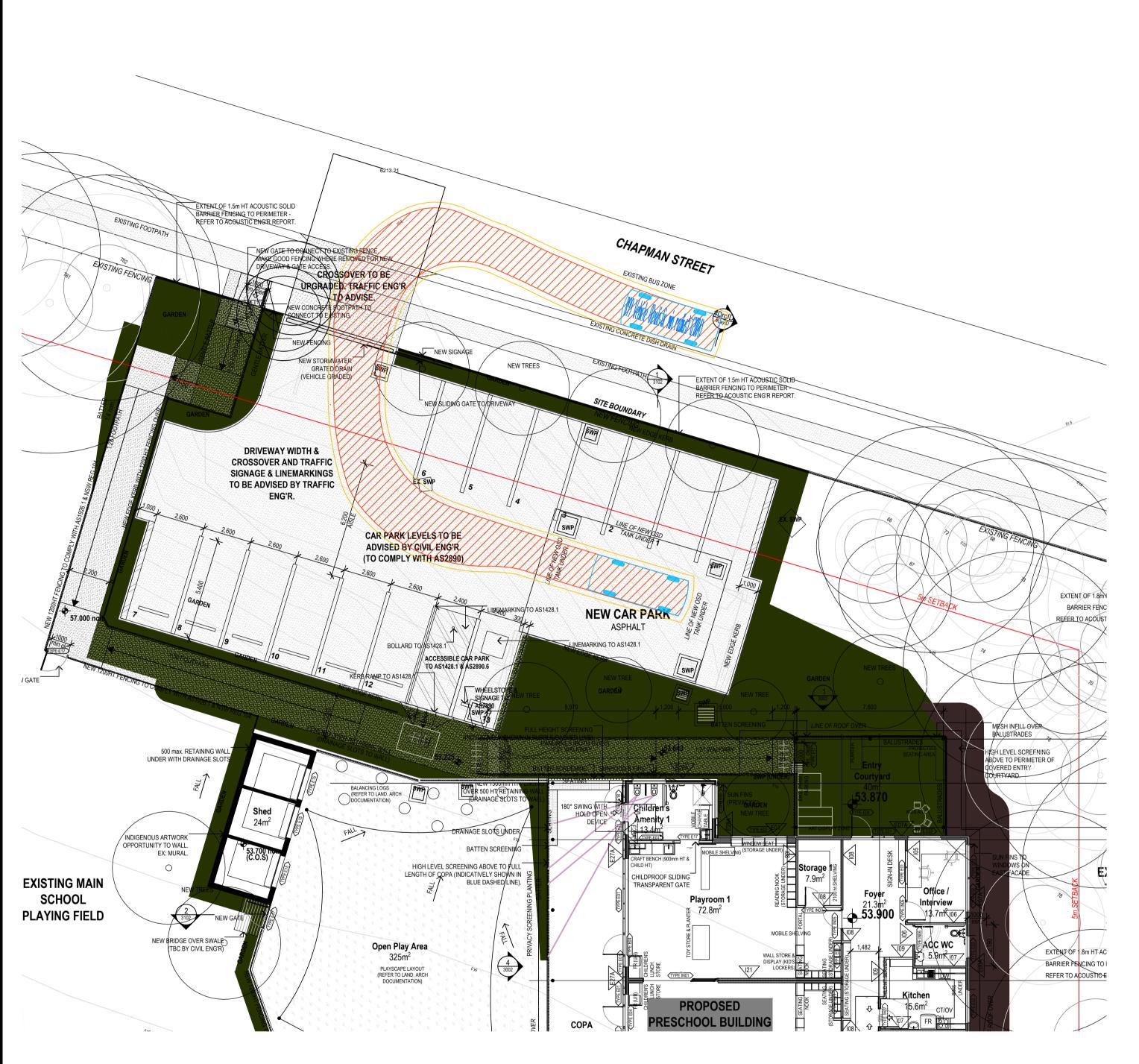
- The beginning of each phase;
- A new major construction activity.

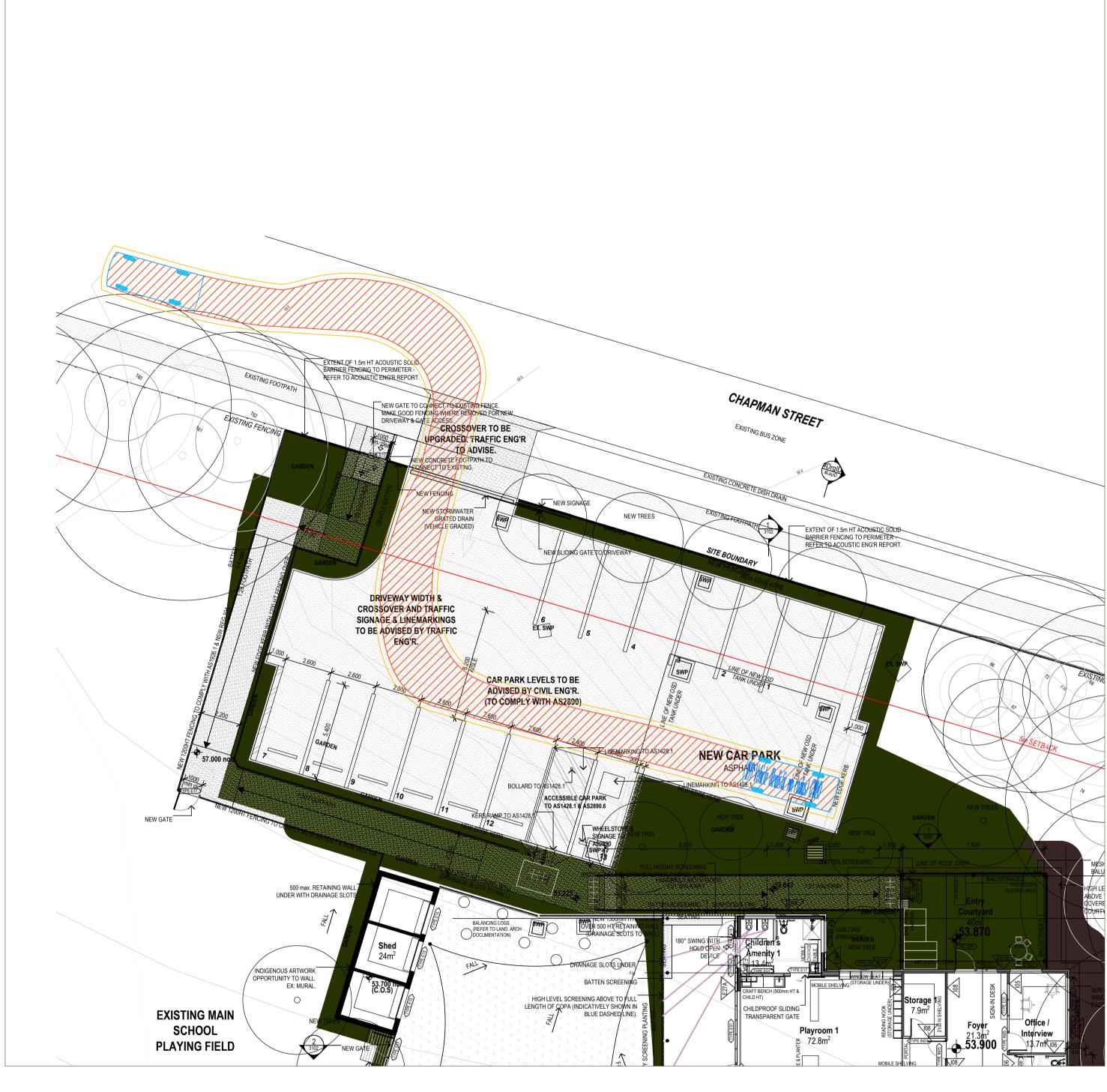
This plan review requires the data collected from the regular inspection and feedback from all stakeholders including school staffs, parents and local community. The Construction Management Plan shall be updated accordingly to reflect the current conditions and all requirements. Full documentation is required for future reference and compliance check.

D. New Preschool Carpark Swept Paths

B99 Left-hand Ingress

B99 Left-hand Egress





B99 Vehicle (Realistic min radius) (2004)

Overall Length 5.200m

Overall Width 1.940m

Overall Body Height 1.878m

Min Body Ground Clearance 0.272m

Track Width 1.840m

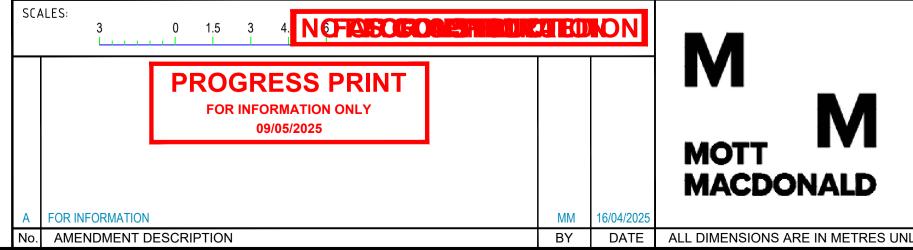
Lock-to-lock time 4.00s

Curb to Curb Turning Radius 6.250m

NOTES

- BASE DWG PROVIDED BY DEPARTMENT OF EDUCATION NSW: GPPS-FTA-00-00-DR-A-1101 REVISION 14 (FULTON TROTTER ACHITECTS, 2025/3/14)
- DESIGN VEHICLE: B85 AND B99 VEHICLES
- DESIGN SPEED = 5km/h
- VEHICLE CLEARANCE ENVELOPE = 300mm AS PER AS 2890 SERIES.
- CONCURRENT MOVEMENTS FOR B85 AND B99 HAVE BEEN CONSIDERED IN ASSESSMENT OF DRIVEWAY AND CIRCULATION

PROJECT DOCUMENT REFERENCE 703102073-MMD-SK-T-0002



MOTT MACDONALD

GREENWAY PARK PUBLIC SCHOOL SWEPT PATH ANALYSIS B85 AND B99 VEHICLE

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E. New Preschool Carpark Access Sight Distance Analysis



