SCT Consulting

MARSDEN HIGH SCHOOL RECREATIONAL FACILITY PLANNING PROPOSAL

Traffic and Transport Impact Assessment

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Quality Assurance

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Contents

Executive Summary

Purpose of this report

A Traffic and Transport Impact Assessment has been undertaken to support the Department of Education c/o School Infrastructure NSW in a planning proposal seeking rezoning of the site.

The proposal

The planning proposal seeks to rezone the existing Marsden High School site from SP2 Educational Establishment to RE1 Public Recreation. The rezoning will accommodate a future recreation use for 32 outdoor netball courts, a four-court indoor facility with associated support spaces, and at grade car parking at the site. The proposed recreational facilities are part of wider plans by Greater Sydney Commission to relocate the 28 outdoor courts existing netball facility at Meadowbank Park. The proposed recreational facilities at the study site will be by the Eastwood Ryde Netball Association (ERNA).

Future planning context

The rezoning of the site supports the high population and economic growth in the City of Ryde Local Government Area (LGA) that is placing pressure on sporting facilities, which have insufficient space for expansion. This recreational facility supports delivery of the Meadowbank Education and Employment Precinct (Greater Sydney Commission), which is relocating Marsden High School into the education and employment precinct by 2022.

Future transport initiatives are aimed at connecting people to jobs, goods, and services in our cities and regions. These investments will increase the permeability of public transport networks throughout suburbs, which benefit both students and school employees through improved accessibility and service. Provision for pedestrian and cyclist activity and efficient interchanging contributes to a safe and comfortable active transport environment. This in turn promotes sustainable mode share.

The North District Plan indicates major transport, health, and education investments are underway, with a focus on well-connected walkable places that build on local strengths to deliver quality public places. This will encourage both school employees and students to shift to public transport or active transport due to improved accessibility around the site.

As part of the proposed City of Ryde Bike Network, Winbourne Street located along the western perimeter of the school is set to become a 'Regional Route'. These routes operate as the 'main roads' of the cycle network providing the greatest connectivity and separation from vehicle traffic. The site's proximity to the boundary of the City of Parramatta means the delivery of the Parramatta Cycling Network will also key supporting cycling to the site.

Existing conditions

The data derived from the 2018/2019 Household Travel Survey showed the Ryde- Hunters Hills SA3 (which the site is located within) is consistent with the Greater Sydney average for most travel modes and purposes of trips. One key difference is the area has a higher bus mode share (10% compared to 5%) which will partially be due to the frequency and speeds of bus services along Victoria Road between Sydney CBD and Parramatta.

The study area is located within walking distance of several bus stops on Winbourne Street (300 m) and Victoria Road (1,200 m). These bus stops located along Winbourne Street are served by routes connecting to Macquarie shops, Auburn and Eastwood. The stops along Victoria Road connect to Sydney CBD, Parramatta, and West Ryde. Services along Winbourne Street are about two every hour whereas along Victoria Road buses depart every 10-15 minutes.

There is no dedicated cycling infrastructure in the vicinity of the site. Pedestrian footpaths are provided on at least one side of the street for the majority of the network within 1,200m of the proposed recreational facility.

The main roads in the vicinity of the development include Victoria Road, Marsden Road, Winbourne Street, Brush Road, and Tramway Street.

Transport assessment

The proposed recreational facility is estimated to generate 132 fewer vehicle trips over an average week compared to the existing Marsden High School.

The relocation of the 28 outdoor courts at Meadowbank Park to the proposed recreational facility means most of the vehicle trips (78%) attributed to the study site are not additional but redistributed from elsewhere in the LGA. The remaining 22% of the forecasted vehicle trips are due to the eight additional netball courts which are planned for the study site. The additional courts are required to population increase within the area.

Victoria Road, within a 1,200m walk of the site, is a high frequency bus corridor linking Sydney CBD, Ryde, and Parramatta. This could act as a viable alternative to the car for members located in proximity to the corridor and reduce pressure caused by high car use on the network. Initiatives, such as an on-demand shuttle bus from designated stops, could further increase the attractiveness of non-car travel modes.

The active transport network around the planning proposal allows for walking and cycling to the nearby residential areas, public parks, and bus stops located along Victoria Road. Initiatives included in this report have the potential to enhance walking and cycling in the area.

Conclusion

The planning proposal is positively aligned with the City of Ryde's ambition to address pressure on sporting facilities within the LGA as well as allow for the creation of new school spaces as part of the Meadowbank Employment and Education Precinct.

The proposed facility will result in a different weekly traffic profile to the existing school site, and a reduction in vehicle trips overall. The proposed recreational facility is located closer to public transport and residential areas than the existing Meadowbank Park netball facility potentially resulting in less car dependency within the LGA.

Capital and operational expenditure proposals have been made in this report to enhance the attractiveness of walking, cycling, and public transport to the site. Nevertheless, the road network is expected to will have sufficient capacity in its existing form to accommodate the vehicle trips from the proposed recreational facility.

1.0 Introduction

1.1 Background

SCT Consulting has been commissioned by School Infrastructure NSW (SINSW) on behalf of the Department of Education (DOE) to prepare a Traffic and Transport Impact Assessment to support a Planning Proposal to amend the 'land use zone' Development Standard in Ryde City Local Environmental Plan 2014 from SP2 Educational Establishment to RE1 Public Recreation. The site will include an indoor facility comprising of four courts, 32 outdoor courts, and provision of on-site car parking. The subject site is bounded by Winbourne Street to the west, and Brush Road to the east, Ermington Public School to the south, and residential properties to the north as shown in **Figure 1-1**.

Figure 1-1 Study area

The intended future use of the recreational facility is for netball courts. The proposed future facility will consist of 32 outdoor hard courts and four indoor courts. The indoor recreational facility will have an approximate floor plan of 4,000m^2 and seating for 100 spectators. Most of the activity will take place on Saturday between 8am–5pm, and one weeknight between 6-10pm.

The proposal is part of wider development plans across the City of Ryde to redesign Meadowbank Park and Memorial Park and deliver new residential and educational premises. The redesign results in the removal of the exiting 28 court netball facility.

1.2 Purpose and scope of the report

The purpose of this Traffic and Transport Impact Assessment is to support the planning proposal for a recreational facility at the existing Marsden High School site. The report will:

- Inform future planning controls to ensure a coordinated and efficient approach to land use planning, environmental management, and transport infrastructure
- Ascertain the cumulative and regional traffic and transport impacts associated with future land-based demands associated with the rezoning
- Maximise efficiency and safety of the existing / proposed transport systems in proximity to the subject site.

The scope of this traffic and transport impact assessment is to:

- Review of relevant background documents and information including relevant state, regional and local planning policies, transport planning documents and parking Development Control Plan (DCP) and standards
- Update the desktop review of existing traffic and transport conditions including Census, Journey-to-work data, travel mode, and existing network descriptions and performance
- Collection and analysis of peak time weekday traffic volumes at Brush Road and Winbourne Street
- Determine the difference in trip generation between the proposed development and the existing school site
- Identify public and active transport measures and sustainable travel initiatives for the development.

1.3 Report structure

This report has been structured into the following sections:

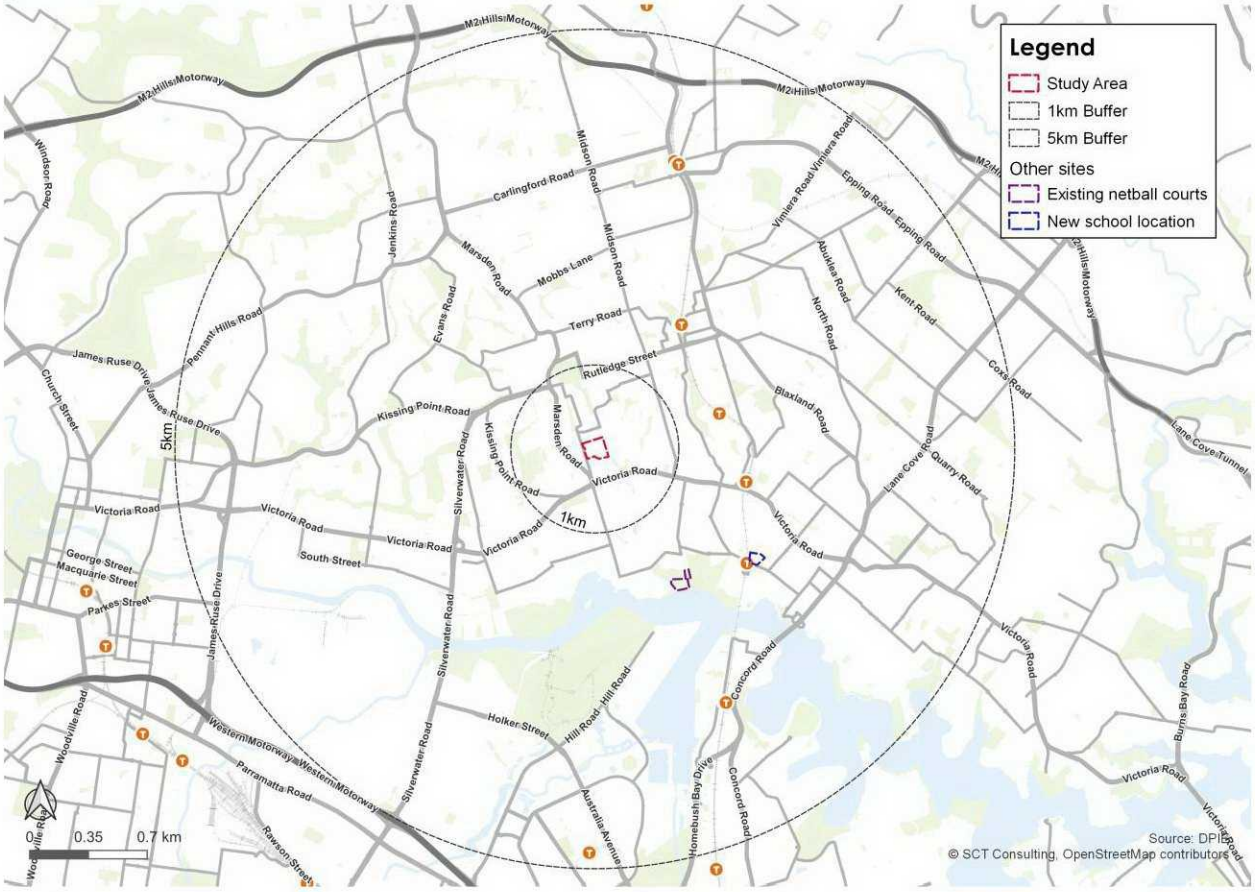
- **Section 2** reviews the relevant strategic planning and transport planning context
- **Section 3** describes the existing transport conditions in and around the site for all modes of transport
- **Section 4** describes the proposed development including development yield and proposed transport network
- **Section 5** discusses the traffic and transport appraisal which covers the assumed transport impacts and the mitigation measures
- **Section 6** presents the conclusions of the assessment

2.0 Strategic Context

2.1 Site context

The proposed recreational facility will be located at the existing Marsden High School site, 22 Winbourne Street, West Ryde. The site is situated between Winbourne Street to the west and Brush Road to the east. The site's regional context is shown in **Figure 2-1**.

Figure 2-1 Site context



The site is currently zoned as SP2 Educational Establishment. The planning proposal aims to amend the 'land use zone' Development Standard in Ryde City Local Environmental Plan 2014 to RE1 Public Recreation. The proposed recreational facility will primarily accommodate the 28 relocated netball courts from the existing facility at Meadowbank Park.

Concept Plans for the proposed recreational facility will see the overall frequency of netball courts increase by eight. The netball courts at Meadowbank Park are to be replaced by multi-purpose sports fields and a community lawn according to the *Meadowbank-Park and Memorial Park Draft-Masterplan (2018).*

Ermington Public School (SP2 Educational Establishment) is located immediately south of the site. Low density residential properties surround the site to the north, east and west (R2 Low Density Residential). Maze Park (RE1 Public Recreation) is located south east of the site. There are two locally heritage listed items within vicinity of the site, being the former School residence/ 1988 Ermington School Building and Maze Park.

As part of the Meadowbank Education and Employment Precinct plans new residential, education, and employments premises will be situated in proximity to the Meadowbank Station. High residential development is also planned for Melrose park, south of Victoria Road.

2.2 Future Transport 2056

The Future Transport Strategy 2056 (NSW Government, 2018) is an update of NSW's Long-Term Transport Master Plan. It is a vision for how transport can support growth and the economy of New South Wales over the next 40 years. The strategy is underpinned by the Regional Services and Infrastructure Plan (NSW Government, 2018) and the Greater Sydney Services and Infrastructure Plan (NSW Government, 2018), as well as several supporting plans including Road Safety and Tourism (NSW Government, 2018).

The Future Transport Strategy 2056 sets the long-term vision for mobility and transport provision in NSW, explaining how the customer experience of transport will change and what this means for NSW. The Future Transport Strategy 2056 identifies Sydney as a growing global metropolis with benefits distributed more evenly across the city. It sets out a vision for a metropolis of three cities, with the vision helping to guide many of the planning, investment, and customer outcomes. Some of the key transport outcomes include faster, more convenient, and more reliable travel times to major centres, as shown in **Figure 2-2**.

Figure 2-2 A future metropolis of three cities

Source: The NSW Government Future Transport 2056 Strategy, 2018

Existing and potential transit connections, together with new technology and innovation, will make the network surrounding the site more responsive to demand and better able to manage congestion in the future. For the three cities identified, more specific outcomes listed as part of the Strategy which will benefit the site's transport context will include:

– A 30-minute access for customers to their nearest Centre by public transport 7-days a week

– Fast and convenient interchanging with walking times no longer than 5 minutes between services

– Walking or cycling as the most convenient option for short trips around centres and local areas, supported by a safe road environment and attractive paths

– Fully accessible transport for all customers.

Moving people from private vehicles to more sustainable transport modes will reduce congestion and the transport sector's emissions intensity, improve air quality, and support better health and wellbeing. Well-planned centres and cities will enable a shift from private cars to public transport and walking and cycling. In Sydney, the key to this will be the delivery of three 30-minute cities, supported by reliable 'turn up and go' mass transit services.

Figure 2-3 shows some of the proposed public transport improvements between Sydney CBD and Greater Parramatta. The blue line labelled 11 is for the Victoria Road Public Transport Improvements program. The program involves improving bus connectivity, speed, and frequency along Victoria Road between Sydney CBD and Parramatta CBD. This could further increase the attractiveness of bus travel within this part of Greater Sydney providing a feasible alternative to the car.

Figure 2-3 Victoria Road Public Transport updates

Source: NSW Government Future Transport 2056 Strategy, 2018

The implication for the proposed future netball facility: Future transport initiatives are aimed at connecting people to jobs, goods, and services in our cities and regions through increased permeability of public transport networks. A high-frequency bus transit corridor in proximity to the site means ERNA located across Ryde and Parramatta will have access to a viable alternative to the car. This can create cost benefits both for the netball members themselves and for the site itself due to reduced demand for parking and associated traffic congestion.

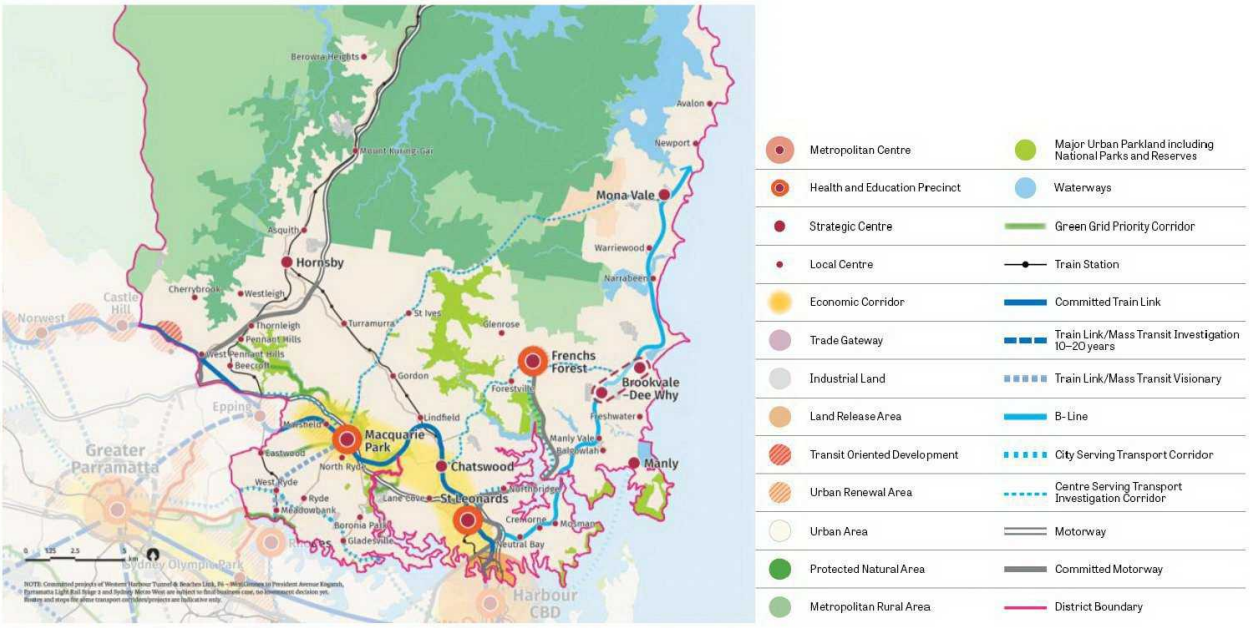
2.3 North District Plan

The Greater Sydney Commission's North District Plan[1] is a 20-year plan to manage growth in Sydney's North District, supporting the long-term vision for Sydney as a metropolis of three cities. The District Plan assists councils to plan for and support growth and change and align their local planning strategies to place-based outcomes. It guides the decisions of State agencies and informs the private sector and the wider community of approaches to manage growth and change.

The location of the current school site means it could benefit from the enhancement of the Eastern Economic Corridor due to a new mass transit public transport corridors and improvements to existing road infrastructure. (**Figure 2-4**).

[1] Greater Sydney Commission (2018), Our Greater Sydney 2056: North District Plan.

Figure 2-4 Future of the North District



Source: Greater Sydney Commission (2018), Our Greater Sydney 2056: North District Plan

Implications for the proposed future netball facility: The development's location in proximity to an existing City Serving Transport Corridor and a visionary Mass Transit/Train Link to Macquarie Park from West Ryde means travelling by public transport will become increasingly viable and attractive to people playing/watching netball at the site. The site also benefits from being located close to Greater Parramatta which is witnessing large amounts of money being invested in public transport corridors within its boundary and to the neighbouring centres.

2.4 Meadowbank Education and Employment Precinct

The NSW Government, in partnership with state agencies, is constructing a new education and employment precinct in Meadowbank at the current TAFE site. The education facilities are expected to be delivered by 2022**. Figure 2-5** shows an overview of the plan.

Figure 2-5 Meadowbank Education and Employment Precinct

- Investigate modifying streets into 'Living Streets' that prioritise pedestrian and cyclist movement
- Enhance connectivity with an overpass across Victoria Road and an underpass beneath the railway line
- Support walking to school by investigating opportunities for pedestrian safety upgrades such as footpath widening, improved intersections, reduced speed limits and/or shared zones
- Improve vehicle access and intersections around the precinct
- Explore opportunities for a shared pedestrian and cyclist route along the railway line with links to the stations, schools, TAFE and the existing cycle network
- Establish legible, welcoming, safe and accessible entries to the schools and TAFE sites
- Strengthen green infrastructure in the region including a blue link along the natural drainage corridor and new green open spaces
- Strengthen the accessibility and connectivity around the existing train station centres

The Meadowbank Education and Employment Precinct is designed to be a centre of excellence for education and lifelong learning and will aim to cater to the growing population in that part of Sydney.

In addition to the primary and secondary schools, it will feature a 10,000-square-metre Multi-Trades and Digital Technology Hub, with learning spaces, workshop areas, and digitally-enabled spaces, and a basement car park.

– The relocation of Meadowbank Public School to the site, with a capacity for up to 1,000 students
– The relocation of Marsden High School to the site, with a capacity for up to 1,500 students
– The construction of a revitalised Meadowbank TAFE, with a focus on technology
– The opening of the Wallamattagal learning centre
– The provision of open space for sports and recreation

As part of the relocation of Marsden High School to the new precinct, the NSW Government announced the old Marsden High School site will become a sports facility featuring four indoor netball courts, 32 outdoor courts, and car parking.

Implications for the proposed future netball facility: Relocating Marsden High School and installing netball facilities on the existing site will lead to changes in travel behaviour and conditions. The site will no longer have traffic implications during weekday mornings or afternoons during typical school pick-up/drop-off times but instead will be observed on Saturdays and some weeknights when most netball games are played.

2.5 Meadowbank Park and Memorial Park Masterplan (2018)

In 2018 the City of Ryde Council began developing a draft Masterplan for Meadowbank Park and Memorial Park. Due to residential and employment growth in the area in combination with the local council's desire for more outdoor space the masterplan aims to community demands and needs for open space.

The project area includes Meadowbank Park and Memorial Park, bounded to the south by Parramatta River and surrounded to the east, north, and west by a combination of low density and medium density residential developments. The parks have multiple access points off Constitution Road, Adelaide Street, Andrew Street, Ross

Smith Avenue, James Street, Lancaster Avenue, Crowley Crescent, and a regional pedestrian and cycle connection from the Ryde RiverWalk. **Figure 2-6** shows an overview of the draft masterplan for the park.

Figure 2-6 draft Meadowbank Park and Memorial Park Masterplan

Part of the masterplan involves the removal of 28 outdoor netball courts currently located within the park. The netball courts (currently located where labels 2 and 11 are situated) will be replaced by multi-purpose sports fields and a community lawn. The 28 outdoor netball courts will be relocated to the existing Marsden High School site as part of this planning proposal.

Implications for the proposed future netball facility: Relocating the netball courts to the Marsden High Site will help remove potential conflict relating to traffic, parking, and sports facility use at Meadowbank Park. Delivering the proposed netball facility at Marsden High School supports wider LGA plans for open space and needs for new sporting facilities.

2.6 City of Ryde Bicycle Strategy (2014)

In 2014 the City of Ryde Council updated its 2007 Bicycle Strategy to guide the future development of cycling until 2024. A key outcome of the strategy was to make cycling easier and more attractive in Ryde and to reduce the community's car use, especially for local or short-distance trips. The strategy focused on all types of cyclists and trip types, aiming to make all cycling trips comfortable, safe, and direct.

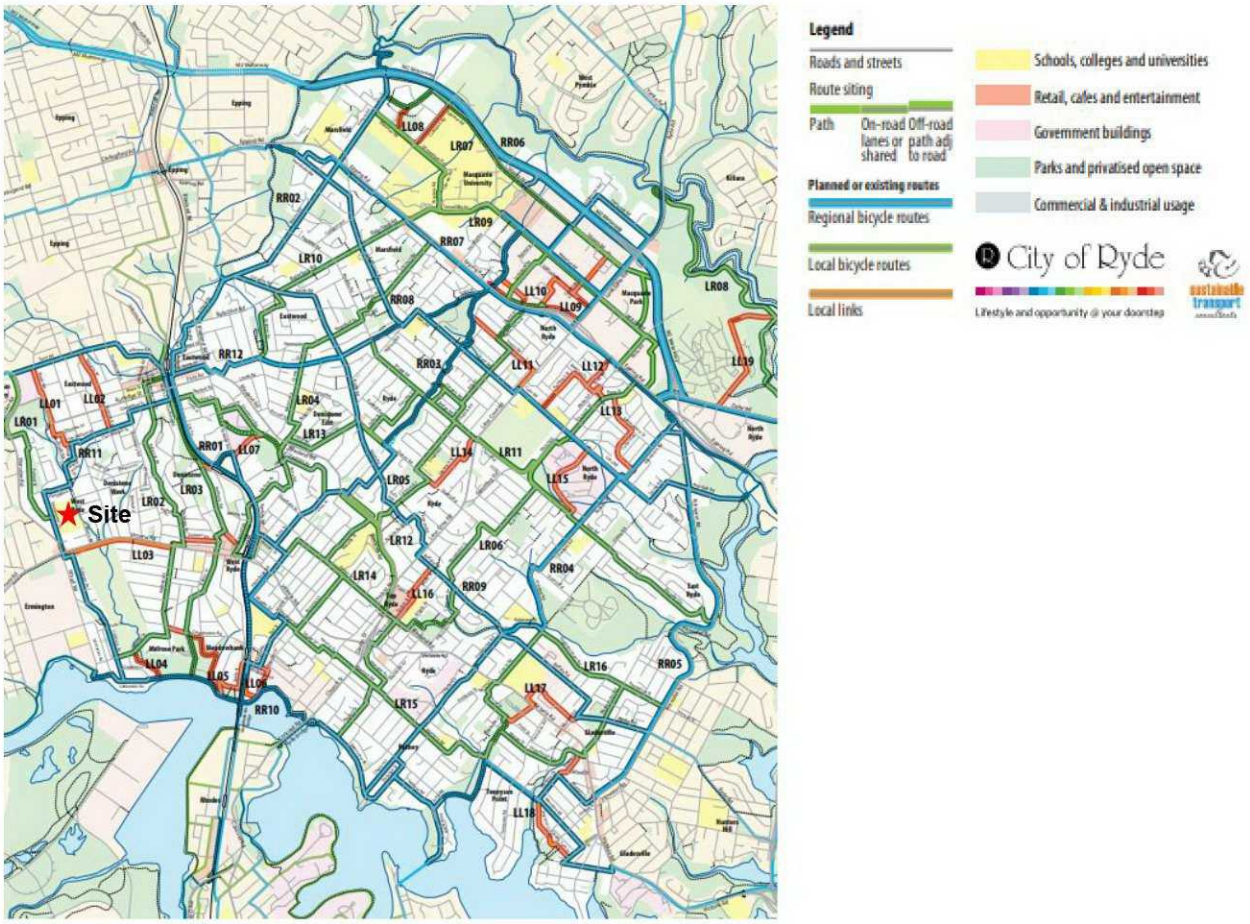
The strategy aimed to deliver its outcomes by focusing on both its bicycle network plan and a bicycle-use support plan. The bicycle network plan involves:

- Building a coherent network consisting of a system of bicycle routes: regional routes for quicker, longer trips; local routes for shorter, localised trips; and low-traffic local streets for easy access to all destinations
- Providing a system of signage and network mapping for easy wayfinding and place details to encourage and assist riders to better use the network
- Formulating a schedule of works consisting of standardised design solutions and specific design solutions; and
- Recommending an on-going monitoring system designed to track usage and to facilitate the removal of identified hazards

The bicycle-use support plan consists of a range of programs and initiatives which are designed to encourage residents to cycle and inform them of where cycling routes and facilities are located.

Figure 2-7 demonstrates where 'Regional Routes', existing and proposed, are/will be located within the City of Ryde LGA.

Figure 2-7 City of Ryde existing and proposed bicycle routes



RR11 which will be located along Winbourne Street would provide a north-south connection between Eastwood and Parramatta Valley Cycleway, located along the Parramatta River. Regional routes are described as the 'main roads' of the Ryde bicycle network and offer the highest level of facility and connection.

Implications for the proposed future netball facility: A high-quality cycle facility in proximity to the site could give people the confidence they need to cycle to the site. The cycle route will be part of a larger network across Ryde which means people who decide to ride will have much greater access to safer and more direct routes than what is currently present along Winbourne Street.

2.7 Parramatta Cycle Plan

The site's proximity to the City of Parramatta LGA means it also important to consider the Parramatta Cycle Plan as part of the strategic context. Cycling will play an important role in realising the vision for the Central City of Sydney. Cycling will support the liveability of Greater Parramatta by enabling residents, workers, and visitors to have more transport choices as the city densifies. Cycling will support growth by helping people access jobs, shopping, education, and recreation through a healthy and low-cost alternative that can help alleviate congestion.

The aspiration of the Parramatta Bike Plan is:

– To enhance the productivity and liveability of Parramatta through an increase in cycling, helping foster healthy and connected residents, workers, and visitors

- For cycling to be safe, and perceived as a safe and attractive option for all members of the community, for those aged 8 through to 80
- To increase the proportion of people cycling in Parramatta to five per cent of all trips to work and ten per cent for those ending in the CBD

Several factors have been identified that will increase the bicycle friendliness of Parramatta and therefore overall cycling participation. These opportunities directly address identified barriers to cycling in Parramatta. By taking advantage of the opportunities presented by cycling, Parramatta will be able to fulfil the local and regional aspirations of Local, State, and Federal Governments for a healthy and connected community. Key moves that will contribute to growing the role cycling plays in Parramatta include:

- Developing a network of separated bicycle lanes that connect future dense precincts with the CBD, train stations, and key destinations
- Improving the efficiency of the road network through line marking enhancements that create dedicated bicycle lanes without any significant consequence for other road users
- Creating lower speed, shared zones on streets too narrow to accommodate dedicated bicycle lanes
- Ensuring all schools and key public transport nodes are connected to the bicycle network
- Connecting the Parramatta bicycle network to key destinations in adjoining local government areas

Implications for the proposed future netball facility: A high proportion of the Eastwood and Ryde Netball association live within the Parramatta LGA, so having high-quality cycleways connecting across LGA boundaries will be important to allow for people to access the site directly and safely.

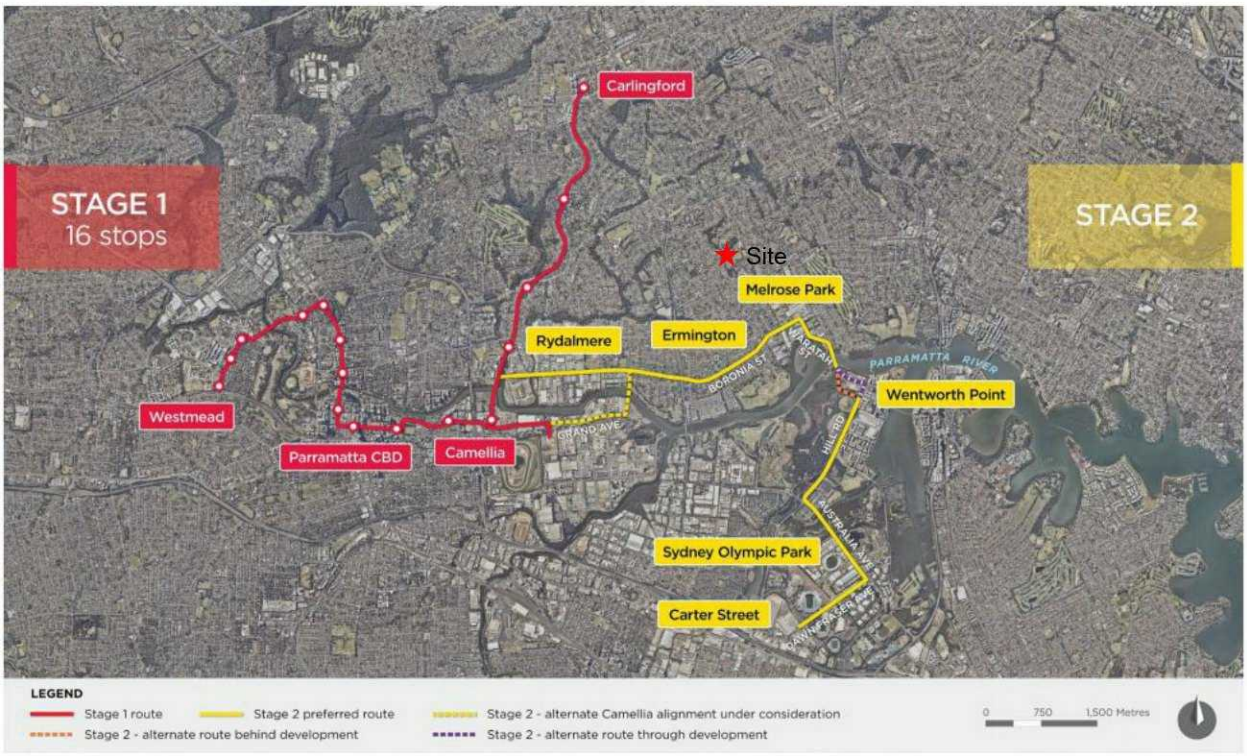
2.8 Parramatta Light Rail Stage 2

Parramatta Light Rail will deliver an integrated light rail service that supports population and employment growth as well as the additional development expected throughout the GPOP priority growth area. The light rail will also integrate with existing and future modes of transport including buses, trains, ferries, and active transport across the area as well as future metro services and the existing road network.

Stage 2 of PLR (the Project) was announced in October 2017 with the preferred route connecting to Stage 1 at Rydalmere and running north of the Parramatta River through the rapidly developing suburbs of Ermington and Melrose Park, before crossing the Parramatta River at Wentworth Point and continuing to Sydney Olympic Park.

Figure 2-8 shows an overview of both stages of the proposed PLR network. The proposed recreational facility would be within 1,500-1,700m of the preferred route at Melrose Park, equating to a 15–20-minute walk.

Figure 2-8 PLR network overview



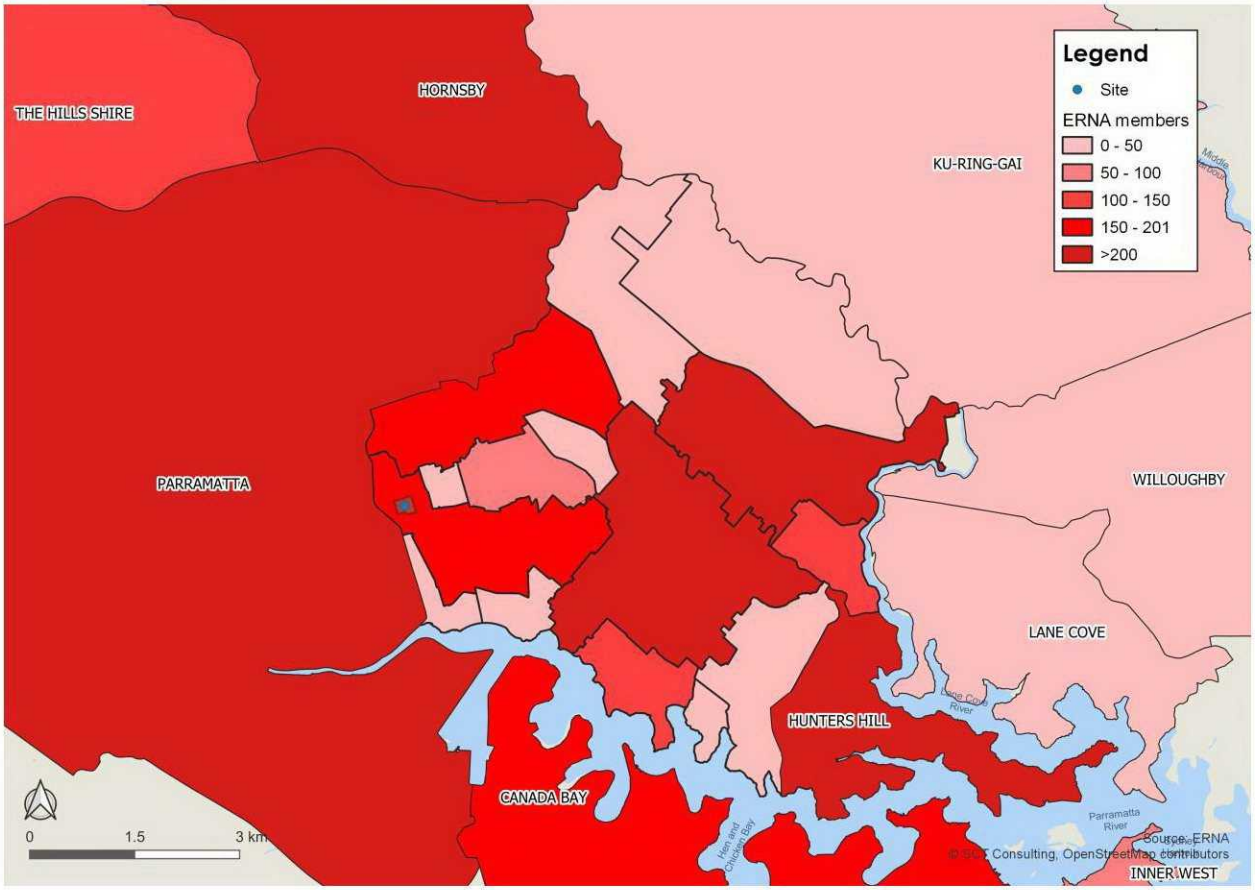
Implications for the proposed future netball facility: Providing greater public transport infrastructure and access near the site would increase its attractiveness and provide a viable alternative to car use in the area. A proposed light rail stop at Melrose Park could provide ERNA members with better access to Parramatta and Sydney Olympic Park.

3.0 Existing Conditions

3.1 ERNA member locations

The approximated locations of the 4,300 active ERNA members were derived from the *Ryde Multi-Sports Facility Needs Assessment Draft Report* by the OTIUM Planning Group. As member locations are only stated at the suburb level within the City of Ryde and Local Government Area for members located outside of Ryde, for the purpose of analysis, members were assumed to be distributed equally within their given suburb/LGA. **Figure 3-1** provides a suburb/LGA overview of ERNA members.

Figure 3-1 Location of ERNA members



The figure indicates the proposed recreational facility is within 3km of suburbs which have 0-201 members and Parramatta LGA which has more than 200 members. This contrasts with the current primary netball facility at Meadowbank Park which is situated within a suburb of low member frequency. Proposed residential development both at Meadowbank and Melrose Park could result in a higher frequency of members being located within 0-3km of the site. As a result, walking and cycling may be attractive travel modes due to potential journey times.

3.2 Travel behaviour

3.2.1 Household Travel Survey mode shares and trip lengths

The study area sits within Ryde – Hunters Hill Statistical Area level 3 (SA3), as shown in **Figure 3-2**. TfNSW Household Travel Survey data for this SA3 has been analysed to determine mode shares and average trip lengths. Unlike the Census Journey to Work data, Household Travel Survey data covers all trip purposes, not just commuting trips. However, as the survey sample size is much smaller, Household Travel Survey data is only available at higher geographies such as SA3s.

Figure 3-2 Study area for household travel survey analysis

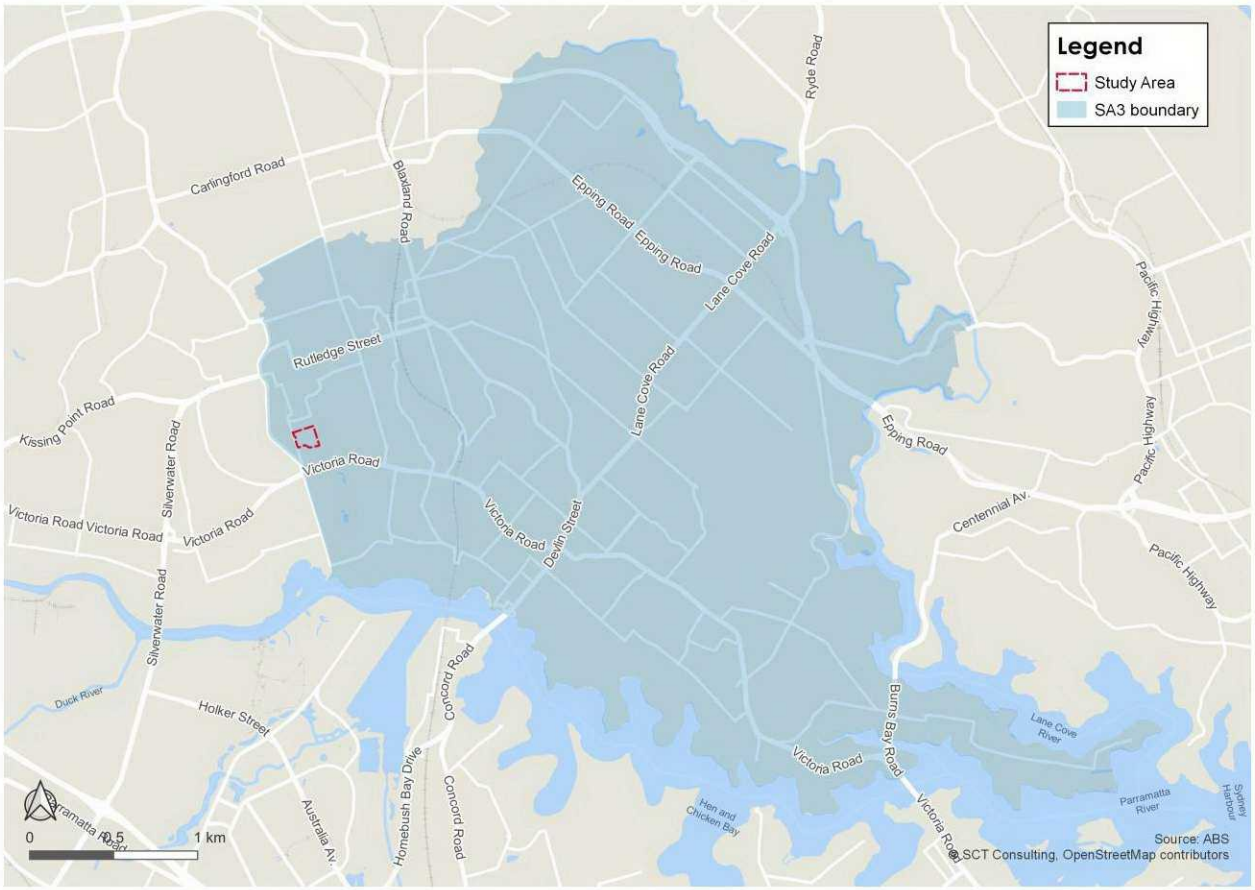


Table 3-1 and **Table 3-2** provide summary mode shares and trip purposes by residents of the Ryde – Hunters Hill SA3 against the Sydney average. The average travel distance for each category is also listed.

Table 3-1 Household Travel Survey – residents in the Ryde – Hunters Hill SA3, travel by mode

Mode of travel	Ryde – Hunters Hill		Greater Sydney	
	Percentage of total trips	Average distance	Percentage of total trips	Average distance
Vehicle Driver	37%	8 km	41%	10 km
Vehicle Passenger	16%	5 km	18%	9 km
Train	4%	16 km	5%	18 km
Bus	10%	8 km	5%	8 km
Walk Only	17%	1 km	15%	1 km
Other	3%	9 km	2%	6 km
Total	**100%**	-	**100%**	-

Source: TfNSW Household Travel Survey data by SA3, 2018/19

The study area has vehicle driver and passenger levels similar to the Sydney average. The bus mode has the greatest difference compared to the Sydney average, which may be a result of public transport corridors such as Victoria Road providing regular bus services between Parramatta CBD and Sydney CBD.

Table 3-2 Household travel survey – residents in the Ryde – Hunters Hill SA3, travel by purpose

Trip purpose	Ryde – Hunters Hill		Greater Sydney	
	Percentage of total trips	Average distance	Percentage of total trips	Average distance
Commute	20%	15 km	17%	15km
Work related business	6%	27 km	7%	16 km
Education/childcare	8%	6 km	10%	6 km
Shopping	16%	7 km	15%	6 km
Personal business	5%	5 km	5%	7 km
Social/recreation	28%	6 km	25%	9 km
Serve passenger	15%	5 km	19%	6 km
Other	2%	5 km	2%	4 km
Total	**100%**	-	**100%**	-

Source: TfNSW Household Travel Survey data by SA3, 2018/19

For almost all modes and trip purposes, the average distance travelled by residents of the Ryde - Hunters Hill was consistent with the Sydney average. The higher average distance for 'Work-related business may reflect a higher proportion of self-employed workers within the SA3 who may be in professions that require visiting multiple addresses in a typical day.

3.3 Active transport network

There is no dedicated cycle infrastructure near the site with only an 80m section of shared path situated along Marsden Road at the intersection with Victoria Road.

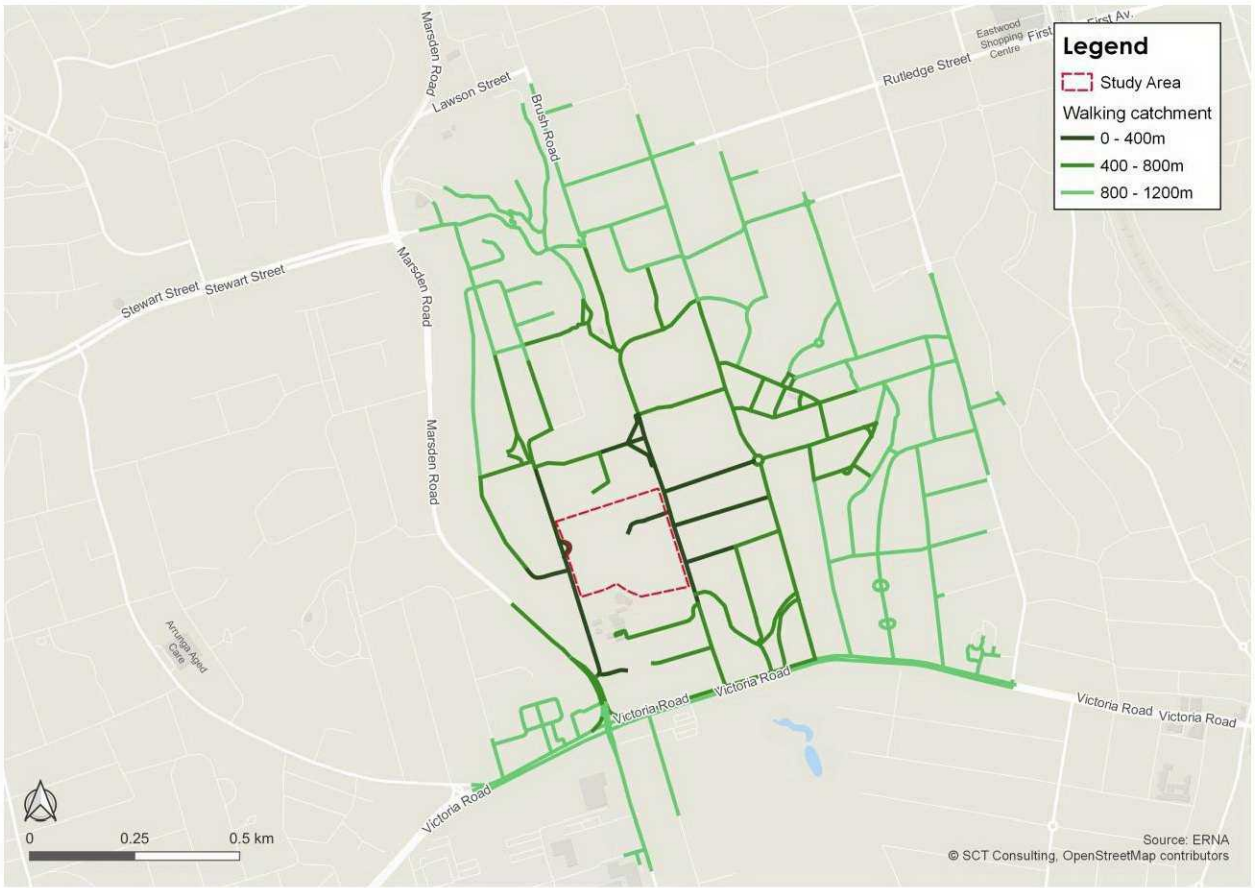
However, according to NSW road rules, children under 16 years old can ride on a footpath for safety purposes. An adult rider who is supervising a bicycler under 16 may also use a footpath. Riders must keep left and give way to pedestrians.

As such, footpaths provide infrastructure for younger ERNA members to cycle on. This is not free from safety risks, as cyclists often move at faster speeds than pedestrians and can cause injury. This is often the case because the footpaths provided are minimum width and minimise room for manoeuvring. Delivery of the proposed City of Ryde Bicycle Plan would provide a substantial improvement on selected corridors by delivering shared paths that allow greater width for manoeuvring.

A lack of crossing facilities is also likely to be a factor in limited cycling uptake. Pedestrian refuge islands in the surrounding areas provide some level of protection whilst crossing but do not provide any priority. These likely increase barriers to cycling due to perceived safety risks.

Figure 3-3 shows most of the street network within 1,200m of the site is walkable with footpaths located along at least one side of the street. Regarding crossing opportunities, Winbourne Street has two sets of wombat crossings as well as traffic calming measures in the form of speed bumps. Brush Road only has a supervised school crossing, which will not be operational when the recreational facility is being used. Crossing opportunities along Victoria Road are limited apart from the traffic signals at the four-arm intersection with Marsden Road and Wharf Road.

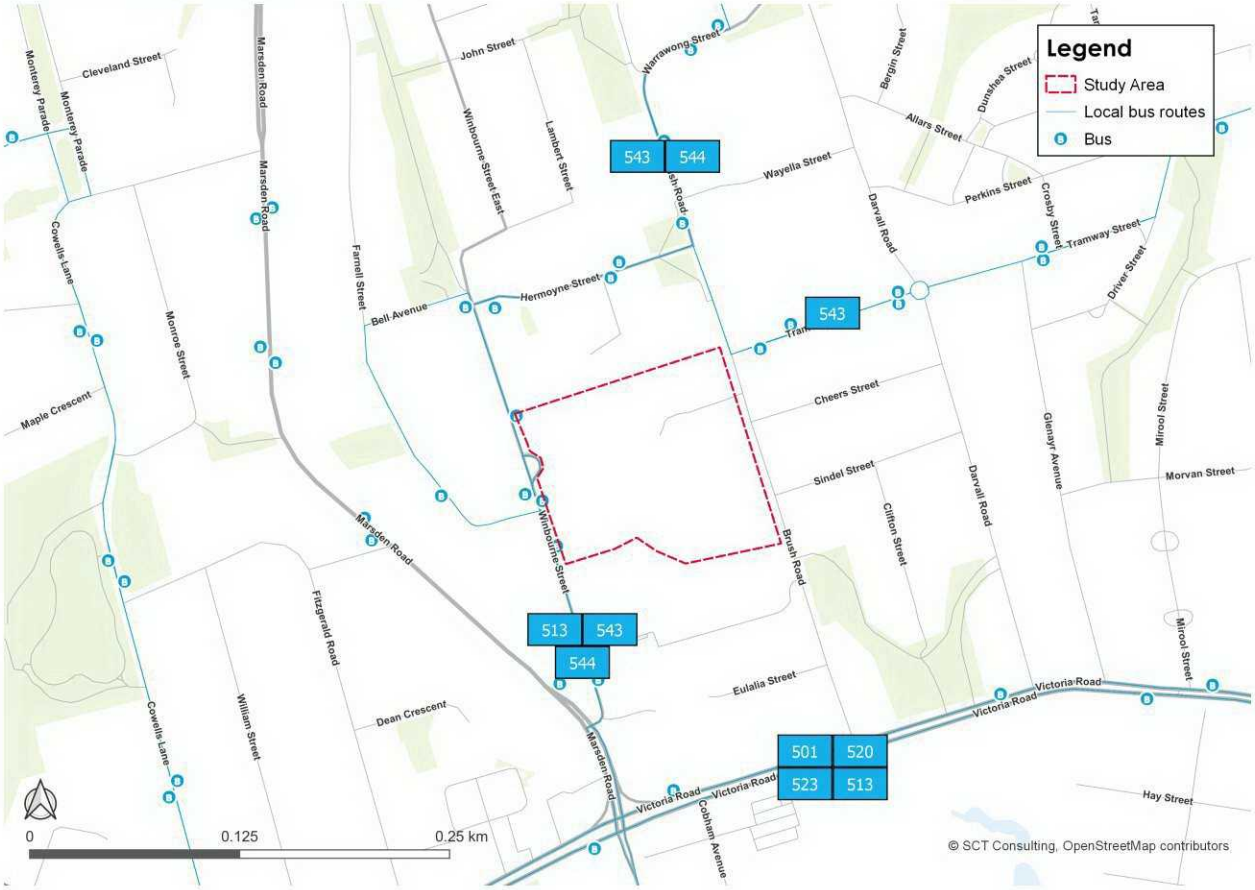
Figure 3-3 Walking catchments from the site



3.4 Public transport network

Public transport facilities around the site are shown in **Figure 3-4**.

Figure 3-4 Public transport around the site



The site is located within walking distance of the bus stops located along Winbourne Street, Tramway Street, and Victoria Road.

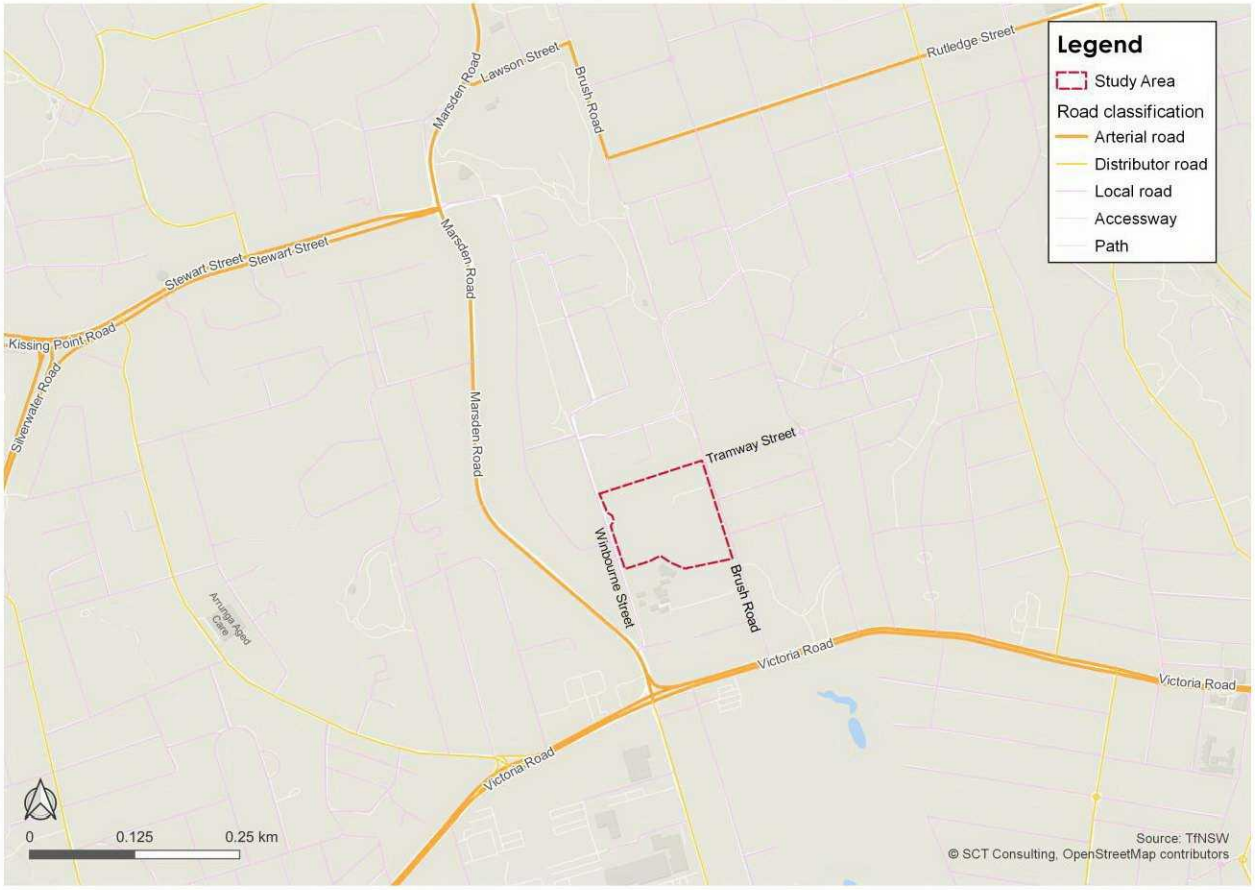
Route 544 which goes along Winbourne Street and Tramway Street connects Macquarie Centre to Auburn via Eastwood. Between 9-10am on Saturday there are two services in each direction. The frequency is similar throughout the day. Victoria Road has a higher bus frequency with four services between 9-10am on Saturday. These routes include the 501 (Parramatta to Central Station), 513 (Parramatta to West Ryde), and 523 (Parramatta to West Ryde). Rail connections to Hornsby, Sydney CBD, and Metro services can be accessed via Meadowbank Station which would equate to 25-30 minutes in walking time from the proposed site.

Overall, the site's location relative to Victoria Road means accessing by bus could be viable due to frequency and speed. Plans to improve the public transport offering along Victoria Road may further increase the attractiveness of the bus for ERNA members. Nevertheless, Victoria Road is a busy movement corridor where there may be long pedestrian wait times to cross which could prolong travel times making the bus an uncompetitive travel mode in comparison to the car.

3.5 Road network and classification

The main roads in the vicinity of the study area include Victoria Road, Marsden Road, Winbourne Street, Brush Road, and Tramway Street. The road network surrounding the proposed neighbourhood centre is shown in **Figure 3-5**.

Figure 3-5 Road network around the site



The characteristics of the roads surrounding the subject site are:

- **Victoria Road** is the primary movement corridor in the area providing connections to Parramatta CBD in the west and Sydney CBD in the east. It is a state road (A40) with a three-lane carriageway configuration with the near-side lanes becoming a bus lane at the section closest to the site. Victoria Road has a posted speed limit of 70 km/h. There is a four-arm intersection of Marsden Road / Victoria Road / Wharf road, which provides the main access to the proposed recreational facility.
- **Marsden Road** is a north-south movement corridor connecting Victoria Road in the south with Carlingford in the north. The road is state-managed with a dual-lane configuration and a posted speed limit of 70 km/h. Access to the site would at the T-junction with Winbourne Street close to the traffic signals with Victoria Road.
- **Winbourne Street** is a local street on a north-south axis located along the western perimeter of the site. The street has a one-lane carriageway configuration with a posted speed limit of 50km/h. The street is located within a low-density residential neighbourhood with both sides of the street used for on-street parking. The locations of Marsden High School site and Ermington Public School means a school zone is in operation along 450m of the street, starting in proximity to the intersection with Marsden Road and ending close to the junction with Hermoyne Street which north of the site. There are several small off-street car parks connected with the two schools and three kindergartens located along the street
- **Brush Road** is a local street on a north-south axis located along the eastern perimeter of the site. The street has a one-lane carriageway configuration with a posted speed limit of 50km/h. The street is located within a low-density residential neighbourhood with both sides of the street used for on-street parking. The locations of Marsden High School site and Ermington Public School means a school zone is in operation along 450m of the

street, starting in proximity to the intersection with Victoria Road and ending close to the junction with Hermoyne Street which north of the site.

– **Tramway Street** is a local street on an east-west axis between Brush Road and Darvall Road, respectively. The street is located within a low-density residential neighbourhood with both sides of the street used for on-street parking. The street has a one-lane carriageway configuration with a posted speed limit of 50km/h. A four-arm roundabout is located where Tramway Street meets Darvall Road.

3.6 Kiss and drop operations

On the 16th of February 2021, SCT Consulting engaged Matrix Traffic and Transport Data to perform vehicle count surveys in the vicinity of Marsden High School. Three locations were chosen on Winbourne Street and four locations on Brush Road to assess the existing kiss and drop operations during the peak hours (8:15-9:15am & 2:30-3:30pm) **Figure 3-6** shows the locations of where the kiss and drop vehicle counts were taken, **Table 3-3** shows the data derived from the surveys.

Figure 3-6 Kiss and drop vehicle count locations

Table 3-3 Traffic volume count survey data for Marsden High School

Road	Location	AM Peak Hour	PM Peak Hour
		Drop-off	Pick-up
Brush Road	1	2	10
	2	2	2
	3	7	0
	4	12	6
Subtotal		*23*	*18*
Winbourne Street	1	39	8
	2	6	5
	3	4	3
Subtotal		*49*	*16*
Total		**72**	**34**

The proximity of Ermington Public School to the Marsden High School site means the proportionality of drop-off/pick-up cannot be fully verified. Furthermore, other streets may have used for kiss and drop arrangements which would not have been included in the traffic volume counts.

4.0 The Planning Proposal

4.1 Proposed development

The planning proposal is seeking to amend the 'land use zone' Development Standard in Ryde City Local Environmental Plan 2014 to RE1 Public Recreation from SP2 Educational Establishments. The rezoning will accommodate a future recreation use for 32 outdoor netball courts, a four-court indoor netball facility with associated support spaces, and at grade car parking at the site. The proposed indoor and outdoor courts will function as a community facility and will be delivered by School Infrastructure NSW.

Plans for the Meadowbank Education and Employment Precinct involve a new secondary school catering for up to 1,500 students. As part of these plans, the existing Marsden High School will relocate to Meadowbank. The relocation of the school will create greater public transport accessibility options for staff and students. A higher frequency of school related trips completed by public transport could lead to a reduction in congestion and safety impacts on the road network within the City of Ryde LGA.

Delivery of the *Meadowbank-Park and Memorial Park Draft-Masterplan (2018)* is expected to lead to the relocation of the existing 28 outdoor courts from the park to the existing school site with the addition of four outdoor courts and four indoor courts. Due to the location of the existing school site, and its proximity to Victoria Road, public transport accessibility will improve as the proposed recreational facility will be within walking distance of the high frequency bus corridor between Sydney CBD, Ryde, and Parramatta.

The changing function of the site will create a different weekly traffic profile than is currently present on the street network surrounding the proposed development. The proposed recreational facility will lead to a decrease in vehicle trips during the week but an increase on Saturday. Nevertheless, the proposed development could result in a small reduction in overall vehicle trips compared to the existing school's operations. Furthermore, at an LGA level only the proposed plans for the eight additional courts, above the existing 28 at Meadowbank Park, has the potential to result in new vehicle trips. Active traffic management and the promotion of sustainable travel modes will help to mitigate the potential for car dependency at the site. Plans for 50 secure bicycle stands will help in the promotion of cycling to the site.

4.2 Access

The primary access point to the site will be via Winbourne Street, which is closer to the indoor facility and car park. Brush Road will provide a secondary access.

Both Winbourne Street and Brush Road have pedestrian crossing facilities in proximity of the site, enabling pedestrian access from all directions. Access from along Victoria Road is facilitated with a series of signalised pedestrian crossings at the intersection with Marsden Road.

The Car park entry and exit will be provided off Winbourne Street. The distribution of ERNA members means it is assumed most drivers will approach the site from the south, entering Winbourne Street at the junction with Marsden Road. A smaller proportion of drivers are expected to approach the site from the north entering Winbourne Street East at the junction the A6 Stewart Street.

4.3 Expected modes shares

Consultation with the ERNA, use of City of Ryde Council's previous traffic impact assessment, analysis of walking, cycling, and public transport catchments were all used to refine the mode share forecasts for the site.

Advice from ERNA is that a typical game would attract 20 players and coaches. With a total of 32 courts, 720 players and coaches are expected. Parents and spectators are assumed to be not significant in that they would travel together with the players and coaches.

Advice from ERNA is that some players may stay for multiple matches, for example when siblings play at different games. As such, there is a reduction factor of the total travel demand reflecting players staying for multiple games. A spreadsheet model was developed to match the traffic generation proposed in the *Meadowbank Park Netball Courts Traffic Impact Assessment Report (City of Ryde Council, 2009)*, which was based on traffic surveys. The non-car mode share and length of stay factors were then calibrated to capture the expected multi-modal travel behaviour.

Table 4-1 provides an estimate of the mode share of the netball courts and **Table 4-2** shows the analysis for the total mode share capturing players who are already at the courts.

Table 4-1 Forecast mode share for the proposed recreational facility for unique trips

Travel Mode	Base case mode share	Member frequency at peak game time (9:30-10:41am)
Walking	6%	30
Cycling	1%	5
Bus	8%	40
Car	85%[2]	428
Total	**100%**	**503**

Table 4-2 Forecast mode share for the proposed recreational facility for all players

Travel Mode	Base case mode share	Member frequency at peak game time (9:30-10:41am)
Walking	4%	30
Cycling	<1%	5
Bus	6%	40
Car	59%	428
Players and coaches staying from previous games	41%	292
Total	**100%**	**720**

[2] Expected passenger occupancy is 1.25 netball players per car

5.0 Traffic and Transport Impact Appraisal

This section assesses the impact of the proposed recreational facility on the transport network. The rezoning will accommodate a future recreational use for netball courts.

5.1 Active transport impacts

The location of the proposed recreational facility provides improved active transport accessibility and better connectivity compared to the existing netball facility. It will be important to ensure a safe, quality, and well-connected footpaths and cycle path system around the site to promote sustainable transport use.

The delivery of future pedestrian paths and cycleways, as part of the City of Ryde Bicycle Strategy and Parramatta Cycle Plan, would enable pedestrians and people who ride bicycles to get to the safety and efficiency. Winbourne Street has been identified as a future segregated cycle route connecting to the Parramatta Cycle Link to Eastwood in the north. This cycle route would provide direct access to the site from other parts of the LGA where the ERNA members are located, reducing dependency on the car. Furthermore, the proposed recreational facility will make Winbourne Street a more attractive cycle route for commuter cyclists due to the removal of school traffic associated with Marsden High School during the week.

As discussed in **Section 3.3**, there is no dedicated cycling infrastructure on any of the approaches to the proposed recreational vicinity. NSW Road Rules allow for people who ride to share the footpath, potentially creating a safer cycling environment than the road alternative. However, this could create safety issues for pedestrians due to the differential in speeds between the two user groups. Full delivery of the bicycle plans outlined by both the City of Ryde Council and the City of Parramatta Council could help create safer and more direct links to the site and remove the potential conflict between pedestrians and cyclists. Furthermore, it is recommended that:

- ERNA coordinate with council and police to ensure cars are following road rules concerning speed and parking. Shared agreement with Ermington PS to share on-site parking
- Coordinate an ERNA cycling group.

5.2 Public transport impacts

The potential customers resulting from the proposal would be located within a short walking distance to bus stops on Winbourne Street and Victoria Road. The existing recreational facility is not easily accessed by public transport leading to high car dependency at the site. Relocating to Winbourne Street will mean a higher proportion of ERNA members can use the bus potentially leading to localised reductions in car trips.

The proposed development's proximity to Victoria Road means accessing the site via bus is an achievable and viable alternative to the car. Plans to improve the public transport offering along Victoria Road may further increase the attractiveness of the bus for ERNA members. It is recommended that:

- TfNSW consider trialling an on-demand shuttle bus to extend the lower frequency public transport network on the weekends
- TfNSW consider increase frequency of bus services along Winbourne Street during peak times for netball activity
- ERNA to encourage visiting associations to hire a coach/mini-bus.

5.3 Road network impacts

The change in the purpose of the study site will result in a different traffic profile for an average week compared to the existing one. The proposed recreational facility will produce fewer vehicle trips between Monday-Friday with the netball courts only in use on one weekday evening. Saturday will be when most of the netball activity occurs accounting for 80% of the overall vehicle trips. No games will occur on Sundays at the facility. Consequently, there could be localised transport improvements during the week along the streets (Winbourne Street and Brush Road) adjacent to the site in terms of vehicle speeds, safety, and air quality.

The concentration of vehicle trips on Saturday will be mitigated by the spacing of the netball games over the day. This will mean the intersections on the approach to the site (Winbourne Street/ Marsden Road, Victoria Road / Marsden Road) are unlikely to exceed operational capacity.

The relocation of Marsden High School to Meadowbank as part of the wider precinct plans could potentially result in fewer vehicle trips across the LGA (if there were no additional courts). This would be due to improved public transport access by train at Meadowbank Station and bus along Victoria Road. Localised transport improvements along Adelaide Street would be expected due to the removal of the netball courts at Meadowbank Park as part of the *Meadowbank-Park and Memorial Park Draft-Masterplan (2018).*

5.3.1 School traffic generation rate

In conjunction with the traffic generation rates calculated from the vehicle count surveys along Winbourne Street and Brush Road the *RMS* (now formally TfNSW)*, Trip Generation Surveys Schools Analysis Report was* also used. Trip generation rates were calculated by conducting traffic surveys at a range of secondary schools located across both urban and rural NSW. For this report the average AM and PM trip generation rates for secondary schools located in Metropolitan Sydney were used, 0.51 and 0.28 respectively. Due to the difference between the trip generation rate calculated from the survey results and the trip generation rates derived from RMS guidance, as well as the assumption kiss and drop occurred on other streets in addition to Winbourne Street and Brush Road, trip generation rates of 0.28 and 0.14 were chosen for the AM and PM, respectively.

5.3.2 Netball courts traffic generation rate

The traffic generation rates for the proposed netball courts were derived from a Transport Impact Assessment for the Meadowbank Park Netball Courts approved by the City of Ryde Council in 2009. This report included reference to surveys that existing netball courts generated 78 vehicles per hour (vph) for 4 courts. A 0.85 confidence rate was applied for the proposed facility of 28 courts, which equated to a trip generation of 17vph per court. This same traffic generation rate was applied for the traffic impact portion of this assessment. The rate was also used to help in benchmarking non-car mode share.

5.3.3 Net traffic generation

The assumed arrival profile for the proposed recreational facility was based on the trip generations rates from the Transport Impact Assessment for the Meadowbank Park Netball Courts (2009), the *Ryde Multi-Sports Facility Needs Assessment Draft Report* by the OTIUM Planning Group and information gathered from consultation with the ERNA surrounding game times, frequency of players, player dwell time, and potential travel modes shares.

ERNA noted the following profile of games on a Saturday, which is the busiest traffic day for the facility:

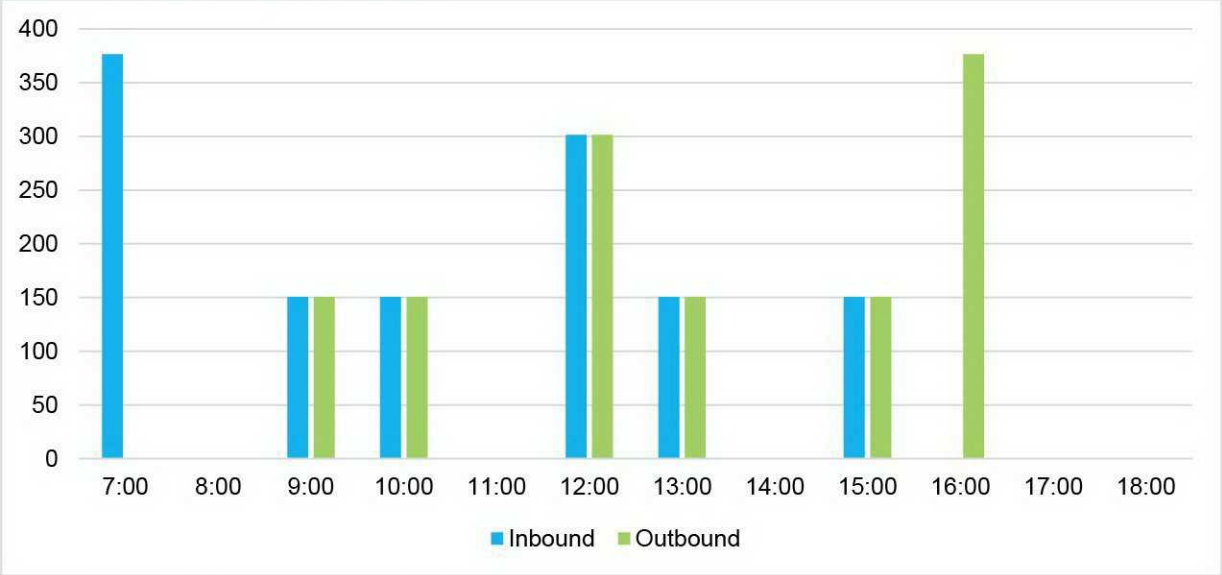
- Game 1: 8:00 – 9:15
- Game 2: 9:30 – 10:41
- Game 3: 11:00 – 12:11
- Game 4: 12:30 – 13:41
- Game 5: 14:00 – 15:11
- Game 6: 15:30 – 16:41

This means that the worst case traffic generation is when games overlap in an hour. This would have been the case for a 28 court facility as much as for a 36 court facility. Hence, the traffic generation rate is assumed to capture these effects.

The worst case scenario therefore occurs when two games overlap in an hour, so that traffic arriving and leaving the facility occurs in the same hour. This occurs several times on a Saturday. The traffic profile is shown in **Figure 5-1** for a typical Saturday.

Evening games occur once a week on a Wednesday.

Figure 5-1Traffic generation profile by hour



Source: SCT Consulting based on City of Ryde, 2021

Based on these assumptions, the forecasted traffic volumes for the proposed recreational facility (**Table 5-2**) were contrasted with the traffic volumes and arrival profile of the existing Marsden High School site (**Table 5-1**). **Table 5-3** shows the hourly and total difference between the proposed recreational facility and the existing school site. As can be observed, the proposed recreational facility results in 132 fewer trips over an average week profile.

Table 5-1 Marsden High School hourly traffic generation

Direction	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00
Monday	0	142	283	0	0	0	0	0	0	142	28	43	0	0	0	0
Tuesday	0	142	283	0	0	0	0	0	0	142	28	43	0	0	0	0
Wednesday	0	142	283	0	0	0	0	0	0	142	28	43	0	0	0	0
Thursday	0	142	283	0	0	0	0	0	0	142	28	43	0	0	0	0
Friday	0	142	283	0	0	0	0	0	0	142	28	43	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 Day Total	**3,187**															

Table 5-2 Proposed recreational facility hourly traffic generation

Direction	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	209	184	0	100
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	377	0	301	301	0	603	301	0	301	377	0	0	0	0	0
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 Day Total	**3,055**															

Table 5-3 Difference between the Marsden High School and the proposed recreational facility hourly traffic generation (net increase in traffic)

Direction	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	Total
Monday	0	-142	-283	0	0	0	0	0	0	-142	-28	-43	0	0	0	0	**-637**
Tuesday	0	-142	-283	0	0	0	0	0	0	-142	-28	-43	0	0	0	0	**-637**
Wednesday	0	-142	-283	0	0	0	0	0	0	-142	-28	-43	209	184	0	100	**-144**
Thursday	0	-142	-283	0	0	0	0	0	0	-142	-28	-43	0	0	0	0	**-637**
Friday	0	-142	-283	0	0	0	0	0	0	-142	-28	-43	0	0	0	0	**-637**
Saturday	0	377	0	301	301	0	603	301	0	301	377	0	0	0	0	0	**2,561**
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7 Day Total	**-132**																

5.3.4 Operational proposals

To mitigate some of the potential impacts on the road network the following operational management approaches are proposed:

- Volunteers for parking management
- Potential use of Ermington Public School on-site parking to distribute traffic across multiple locations
- Encouraging carpooling with players
- Share parking information across all Sydney netball associations
- Longer breaks between games to limit parking crossover
- Split games across more days.

6.0 Conclusion

6.1 Conclusion

The proposed recreational facility will be in an area of higher accessibility, in contrast to Meadowbank Park, by both active transport and public transport. Regardless of proposed capital or operational initiatives analysis of the ERNA member's locations in conjunction with the street and public networks mean car mode share could fall. Encouraging the ERNA to take active responsibility for access management to the site, with assistance from the City of Ryde Council, School Infrastructure NSW, and TfNSW could help to limit car travel and increase the likelihood of members choosing to walk, cycle, or ride public transport.

This traffic and transport impact assessment concludes that:

- The proposed recreational facility is positively aligned with the ambitions of the City of Ryde Council and the NSW Government to cater for new community sporting facilities in the area.
- The planning proposal aligns with the initiatives proposed in the City of Ryde Bicycle Strategy due to the site's proximity to planned high quality walking and cycling infrastructure which will help to promote active transport access to the site.
- The proximity of the site to Victoria Road, and the plans proposed in the Future transport 2056 by the NSW Government for the road to become a high-frequency bus corridor means public transport will become a more attractive travel option compared to the existing netball courts at Meadowbank Park.
- The planning proposal is estimated to generate 132 fewer vehicle trips over an average week compared to the existing Marsden High School.
- Without infrastructure upgrades, the road network will have sufficient capacity to accommodate the additional and redistributed netball related trips.
- The study concluded that the impacts of the planning proposal are at a level able to be accommodated by the existing and planned infrastructure.

SCT Consulting