42 – 44, Norfolk Road
Greenacre NSW 2190

Child Care Center – October 2024

SYDNEY TRAFFIC ENGINEERS

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Revision No.	Date	Description
0	25/09/2024	DA
1	29/10/2024	DA

1. Executive Summary

The Traffic Impact Assessment (TIA) for the proposed redevelopment of the childcare center at 42-44 Norfolk Road, Greenacre, evaluates the project's potential effects, which include the amalgamation of Lot 100 and Lot B, the addition of a two-storey extension, and the construction of a basement carpark to enhance service capacity. The assessment indicates that the redevelopment is expected to generate a maximum of 32 two-way vehicle trips during the AM peak hour, with lower trip rates during the early afternoon and PM peak hours. These projections are typical for childcare centers and are unlikely to significantly impact traffic conditions in the surrounding low-density residential area.

The development will provide 23 on-site parking spaces, equally divided between staff and visitors, in compliance with NSW guidelines, and will include bicycle parking to encourage active transport. The facility's proximity to Bus Route 913 along Waterloo Road will further reduce reliance on private vehicles, promoting a sustainable travel environment.

The existing road network, including Norfolk Road and Waterloo Road, can accommodate the anticipated additional traffic, and the basement carpark design aims to minimize on-street parking issues while ensuring safe access for pedestrians and cyclists. Overall, the proposed redevelopment is expected to have minimal impact on local traffic and parking, aligns with relevant planning controls, and effectively balances community needs with the aim of minimizing disruption to the neighborhood, thus deeming the project feasible from a traffic and transport perspective.

2 Project Detail

2.1 Project Summary

This report addresses the proposed redevelopment of the childcare center located at 42-44 Norfolk Road, Greenacre, NSW **(Figure 2.1)**. The project involves the amalgamation of Lot 100 and Lot B, with significant alterations and additions to the existing facility. Key features of the development include the construction of a new basement carpark level to improve on-site parking capacity, and the addition of two storeys above the existing structure to enhance the center's capacity and services **(Figure 2.2 to 2.6)**. These upgrades are designed to meet current regulatory standards and accommodate the increasing demand for childcare services in the Greenacre area, ensuring the center continues to offer a safe, modern, and accessible environment for children and families.

Figure 2-1: Location of the Site

Figure 2-2: Demolition Plan

Figure 2-3: Proposed Basement

Figure 2-4: Proposed Ground Floor Plan

Figure 2-5: Proposed First Floor Plan

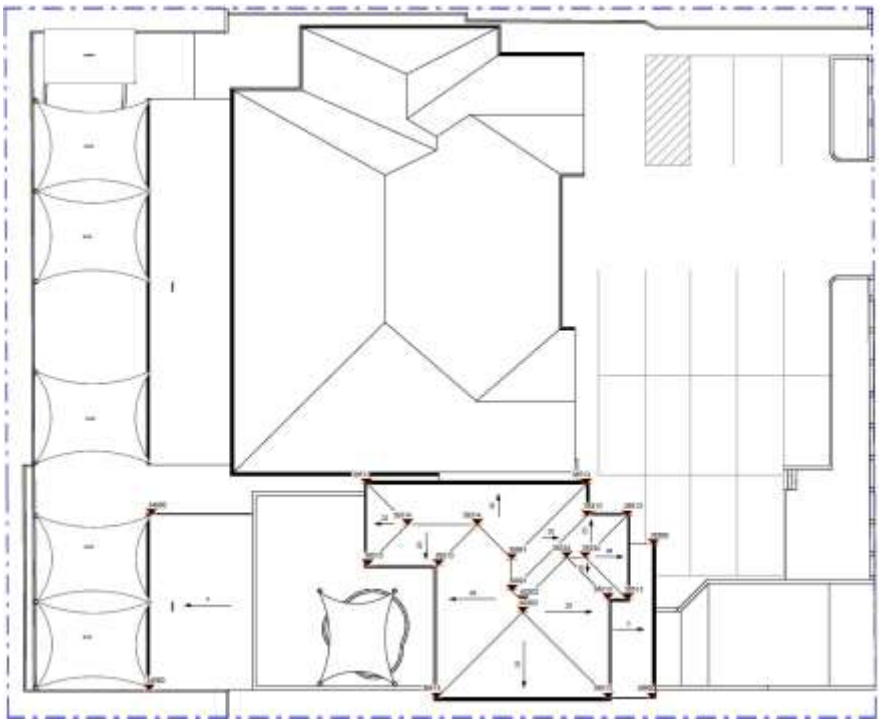

Figure 2-6: Proposed Roof Plan

2.2 Assessment Tasks

This Traffic Impact Assessment (TIA) evaluates the traffic and parking analysis, including:

- Describe the site, its context, and the proposed development scheme.
- Describe the road network serving the site and the prevailing traffic conditions.
- Assess the adequacy of the proposed parking provision.
- Assess the potential traffic implications.
- Assess the suitability of the proposed vehicle access, internal circulation, and servicing arrangements.

2.3 Relevant Planning Control

The project lies within the Canterbury-Bankstown Council local Government area, such that the relevant Council planning controls and strategies reference in this report include:

- Canterbury-Bankstown Development Control Plan 2021.
- Canterbury-Bankstown Local Environmental Plan (LEP) 2021
- Canterbury-Bankstown Community Strategic Plan 2028

2.4 Traffic, Transport and Parking Guidelines & Standards

In preparing this report, reference is also made to the following site access, traffic and parking guidelines:

- RTA Guide to Trip Generating Developments 2002
- Australia Standards 2890.1 (2004) – Off-Street Car Parking
- Australia Standards 2890.2 (2018) – Off-Street Commercial Vehicle Facilities
- Australia Standards 2890.3 (2015) – Bicycle Parking
- Australia Standards 2890.6 (2022) – Off-Street Parking for People with Disabilities

3 Exiting Conditions

3.1 Site Location and Description

The site is located at 42-44 Norfolk Road, Greenacre, within the Canterbury-Bankstown local government area (LGA) in Sydney, NSW (**Figure 3.1**). Greenacre is a well-established suburban area characterized by a mix of residential and commercial developments. The site is positioned in a primarily residential zone, surrounded by low-density housing and local amenities, including schools, parks, and retail outlets.

The site consists of two parcels, Lot 100 and Lot B, which are proposed for amalgamation. It is currently occupied by an operational childcare facility. The surrounding road network includes Norfolk Road, a local street providing access to the site, with connections to nearby major roads such as Waterloo Road. The area is serviced by public transport, with bus routes operating in close proximity, facilitating access for staff and parents.

The site's location within this community provides a strategic advantage for the expansion of the childcare center, catering to the needs of local families while minimizing disruption to the neighborhood through careful planning of parking and traffic flow.

Figure 3-1: Site Location for Child Care Center

3.2 Planning Context

The site is zoned R2 Low-Density Residential, which permits childcare facilities subject to consent **(Figure 3.2)**. The proposed development aligns with the zoning objectives, supporting residential amenities and community services within the area.

The amalgamation of Lot 100 and Lot B will create a larger parcel of land, providing a greater opportunity for the childcare center's expansion while adhering to key planning regulations regarding building height, floor space ratio (FSR), and setbacks as stipulated by the Canterbury-Bankstown LEP and Development Control Plan (DCP). The design of the alterations, including the addition of two storeys and a basement carpark, has been planned to comply with these controls, ensuring minimal impact on the surrounding residential character and maintaining harmony with the neighborhood.

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Figure 3-2: Zoning Map

(Source: ePlanning Spatial Viewer)

3.3 Existing Road Network

The The site at 42-44 Norfolk Road, Greenacre, is situated within an established road network that supports both residential and commercial traffic. The primary roads in the vicinity of the site include the following:

- Norfolk Road (**Figure 3.3** and **3.4**): A local street providing direct access to the childcare center. Norfolk Road is a two-way road with on-street parking available along sections. It primarily serves the residential neighborhood, with moderate traffic volumes during peak periods.

Figure 3-3: Eastbound of Norfolk Road

Figure 3-4: Westbound of Norfolk Road

- Waterloo Road **(Figure 3.5)**: Located to the south of the site, Waterloo Road is a key collector road that connects to major arterials. It provides an important link between local streets and Roberts Road, a major thoroughfare in the region.

Figure 3-5: Intersection Norfolk Road and Waterloo Road

3.4 Public Transport

3.4.1 Bus Routes

The area is served by a number of bus routes that operate in close proximity to the site, facilitating convenient public transport access. Key bus services in the vicinity include:

- Bus Route 913 (**Figure 3.6**): Running along Waterloo Road and connecting Bankstown to Strathfield, this route provides direct access to two major suburban centers, with further connections to the Sydney Trains network. The service operates with a frequency of **two buses per hour**, offering convenient and reliable public transport.

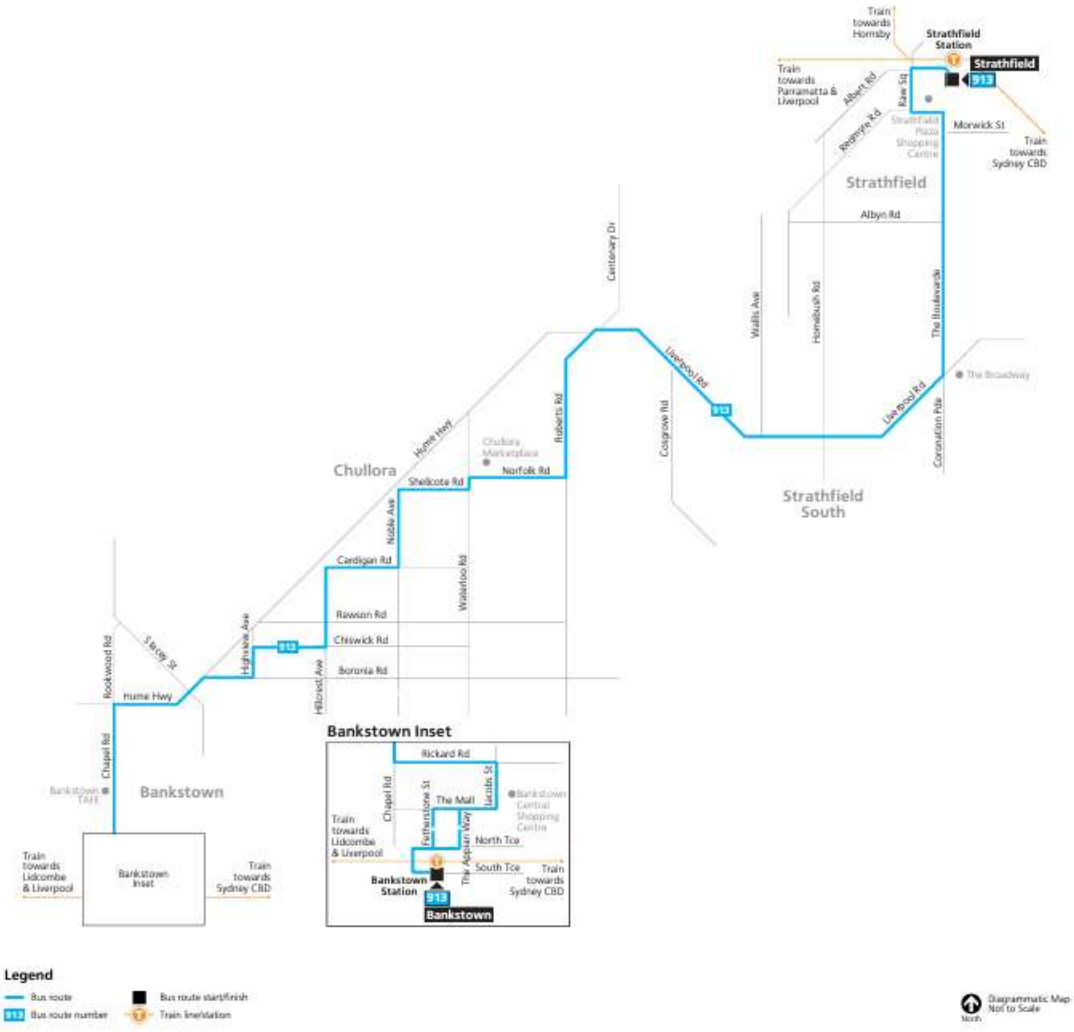

Figure 3-6: Bus Route 913

4 Policy, Strategy and Plan

4.1 Canterbury-Bankstown Local Environmental Plan (LEP) 2021

The LEP outlines zoning regulations, land use permissions, and controls related to building heights, setbacks, floor space ratios, and other development standards. The proposed childcare center expansion must align with the provisions of the R2 Low-Density Residential zoning, ensuring that the project contributes positively to the community while maintaining the character of the area.

4.2 Canterbury-Bankstown Development Control Plan (DCP) 2021

The DCP provides detailed guidance on the planning and design of developments in the area, including childcare centers. It includes controls related to building design, parking, landscaping, and traffic management. Specific sections of the DCP that may apply to this project include:

- Part B10 – Childcare Facilities: The specific guidelines for the design and operation of childcare facilities, including site layout, access, parking, and outdoor play areas.
- Part B5 – Parking and Access: The parking requirements for developments and how traffic should be managed to minimize disruptions to the surrounding area.

4.3 Canterbury-Bankstown Community Strategic Plan 2028

The Community Strategic Plan sets out long-term goals for the Canterbury-Bankstown area, focusing on improving the quality of life for residents. The childcare center expansion aligns with the plan's objectives of enhancing community services, supporting families, and improving access to education and care. The plan emphasizes sustainable development, which correlates with the design of the childcare center's basement carpark, public transport integration, and active transport options.

5 Traffic Impact Assessment

5.1 Introduction

The site is in a low-density residential area with limited commercial activities, resulting in relatively low traffic volumes and parking demand along the surrounding road network, including Norfolk Road.

Traffic flows on Norfolk Road are consistent with those expected of a local access road, though no recent traffic volume counts have been undertaken. It is anticipated that peak traffic volumes will occur during standard commuter periods, between 7:00am to 9:00am in the morning and 4:00pm to 6:00pm in the afternoon on weekdays. These periods will coincide with the drop-off and pick-up times for the childcare center, with the highest concentration of traffic expected between 7:30am and 9:00am in the morning and 3:00pm to 4:30pm in the afternoon.

Additionally, Chullora Public School, located approximately 1.2 km from the site, influences the traffic activity in the area during school-related pick-up and drop-off times, typically occurring between 2:30pm and 3:30pm. However, given the low-density nature of the surrounding area, the traffic generated by the expanded childcare center is not anticipated to have a significant impact on overall traffic conditions. The provision of a basement carpark will further mitigate potential parking or traffic congestion issues by accommodating staff and parent vehicles on-site

5.2 Traffic Impact Assessment

Pedestrian Council does not provide traffic generation rates within its DCP and to assist with assessment of the proposed development the following two-way vehicle trips are estimated, based on the RTA's Guide to Traffic Generating Developments, 2002 (Version 2.2), Section 3.11.3 – Child Care center (Table 3.6), **Table 5.1**.

Traffic Generation Rates I Hour (two-way trips)			
	7:00am – 9:00am	2:30pm – 4:00pm	4:00pm – 6:00pm
Long-day Care Peak Vehicle Trips per Child	0.8	0.3	0.7
Traffic Generation due to proposed extension	(80*0.8)/2=32	(80*0.3)/2=12	(80*0.7)/2=28

Table 5-1: Trip Generation for Child Care Centre

On the basis that the proposed Child Care Centre is to accommodate up to eighty (80) children, the calculated maximum peak hour two-way vehicle trips generated by the proposed facility would be:

Two-way peak hour traffic generation

7:00 am and 9:00 am = (0.8 x 80)/2 = 32 vehicles per hour

2:30 pm and 4:00 pm = (0.3 x 80)/2 = 12 vehicles per hour

4:00 pm and 6:00 pm = (0.7 x 80)/2 = 28 vehicles per hour

Therefore, it is concluded that the maximum traffic generation by the proposed Childcare Centre development is 32 vehicles per hour.

Given the nature of the adjoining road network and the abutting land-use development, the impacts of generated traffic on the existing road network and adjoining intersections would be greatest during the AM peak flow time but considered minimal. It is also considered the current operating "Level of Service" would remain unchanged compared with table 4.4 of RTA's Guide to Traffic Generating Developments, 2002 (Version 2.2), Section 4.2 Impact on traffic efficiency **(Table 5.2)**.

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Table 5-2: Urban Road Peak Hour Flows per Direction

It is anticipated that these rates could be discounted if a number of children are of the one family, are siblings of children attending the school to the north and locals accessing the facility (as pedestrians).

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5.3 Parking Requirements

The design of the car parking spaces in the proposed redevelopment adheres to User Class 1A standards for residential parking, featuring bays oriented at 90 degrees, with each space measuring a minimum length of 5.4 meters and a width of 2.4 meters, complemented by a minimum aisle width of 5.8 meters. Parking is managed by wheel stops positioned at right angles to the parking direction. Dead-end aisles include the required 1.0-meter aisle extension, in line with Figure 2.3 of AS 2890.1 (2004). Additionally, the development includes one accessible/adoptable parking space, which will be evaluated and approved by an accessibility consultant.

The internal ramp of the car park is designed with a maximum gradient of 23.25% (1 in 4.3), featuring sag and summit transitions of 12.5% (1:8) within the property boundary, ensuring compliance with Section 3.3(a) of AS 2890.1 (2004). It also meets the straight ramp requirements for private or residential car parks, with a maximum gradient of 25% for lengths up to 20 meters, as specified in Section 2.5.3(b)(ii) of the same standard. Furthermore, a minimum clear head height of 2.2 meters is maintained throughout the basement car park, in accordance with AS 2890.1 (2004), while accessible spaces are designed to provide a minimum clear head height of 2.5 meters, as mandated by AS 2890.6 (2004).

based on the RTA's Guide to Traffic Generating Developments, 2002 (Version 2.2), Section 5.14 – Summary table for parking requirement (Table 5.3):

Land Use	Parking Requirement
Health and Community Services	
Child Care Centers	1 space for every 4 children in attendance

Parking Requirement is 1:4 children. 80/4 = 20 parking spaces

Number of provided: 23 parking spaces **(Figure 5.1 and 5.2)**

Staff parking = 8 parking spaces
Visitor parking = 15 parking spaces

It complies with the parking requirements.

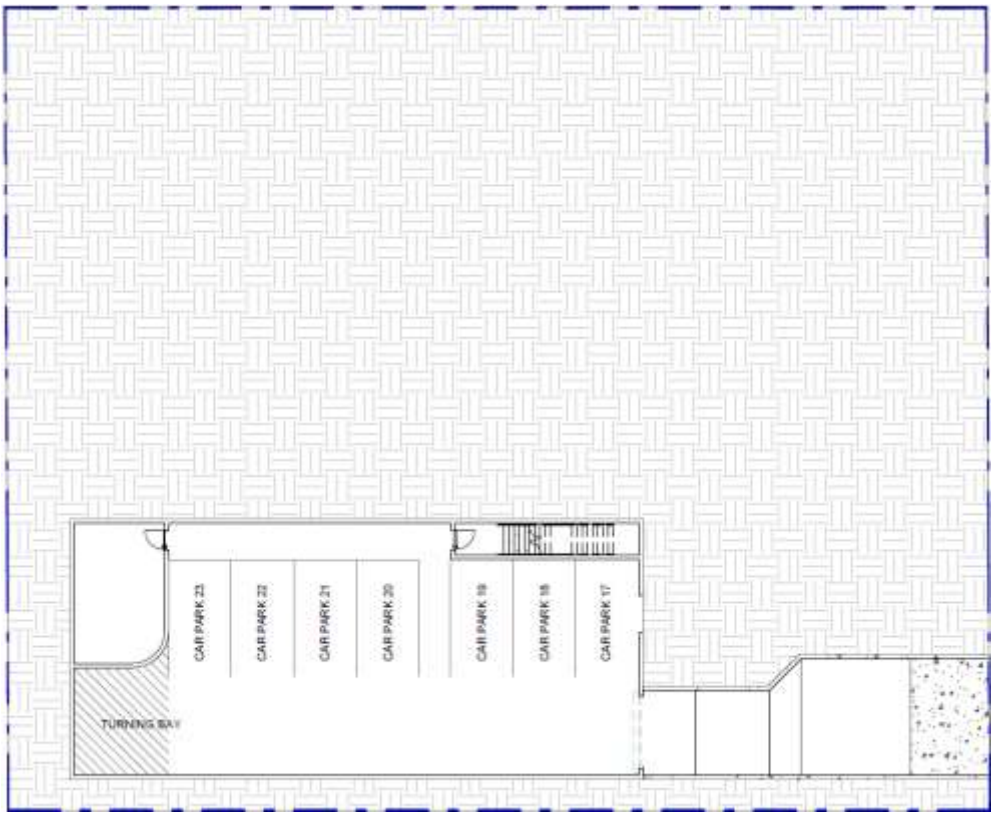

Figure 5-1: Parking Space (7 spaces) at Basement

Figure 5-2: Parking Space (16 spaces) at Ground Floor

5.4 Swept Path Analysis

The Swept Path Analysis (SPA) is an essential component of the Traffic Impact Assessment for the redevelopment of the childcare center at 42-44 Norfolk Road, Greenacre. The analysis assesses vehicle maneuverability within the proposed site, particularly focusing on access to the basement carpark, drop-off/pick-up zones, and overall interaction with the adjacent road network.

The SPA evaluates whether the design layout of the site can accommodate the types of vehicles expected to use the facility, including staff vehicles, visitor vehicles, service vehicles (such as garbage collection trucks), and emergency vehicles. This ensures that vehicles can safely and efficiently enter, exit, and maneuver within the site without encroaching on pedestrian areas or adjacent properties.

The Swept Path Analysis was conducted using industry-standard software in accordance with the Australian Standards AS 2890.1:2004 (Parking Facilities). The analysis examined key movement areas, including:

- Entry and exit points for the basement carpark
- Circulation paths within the carpark
- Drop-off and pick-up areas
- Turning bays within the site

The results of the Swept Path Analysis demonstrate that:

- Basement Carpark Access: Small passenger vehicles can enter and exit the basement carpark via Norfolk Road without crossing into opposing traffic lanes. The turning radius provided at the basement entry is compliant with Australian standards, allowing for smooth and safe access, as shown in **Figure 5.3**.

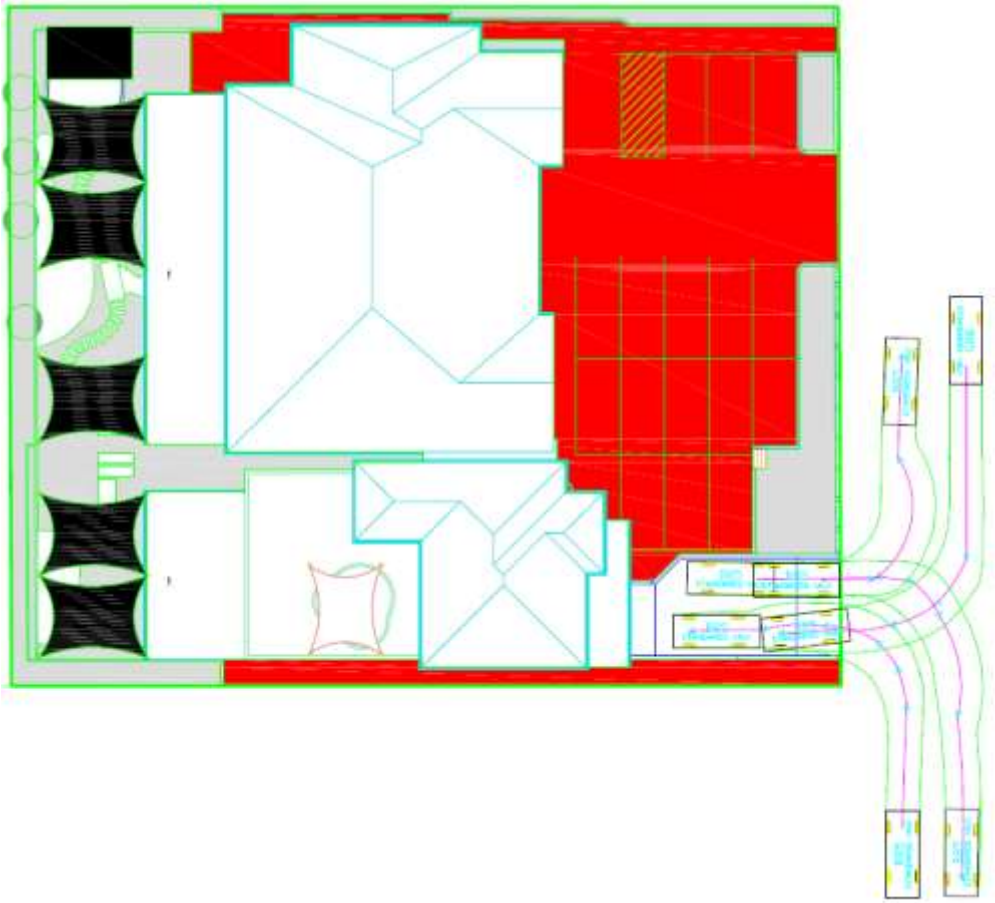

Figure 5-3: Swept Path Analysis for Basement Carpark Access

- Circulation within the Basement Carpark: Vehicles can maneuver comfortably within the basement carpark, including performing three-point turns where necessary. The width of the driving aisles and the parking bays are compliant with *AS 2890.1:2004*, ensuring adequate space for vehicle movement as shown in **Figure 5.4 and Figure 5.5**.

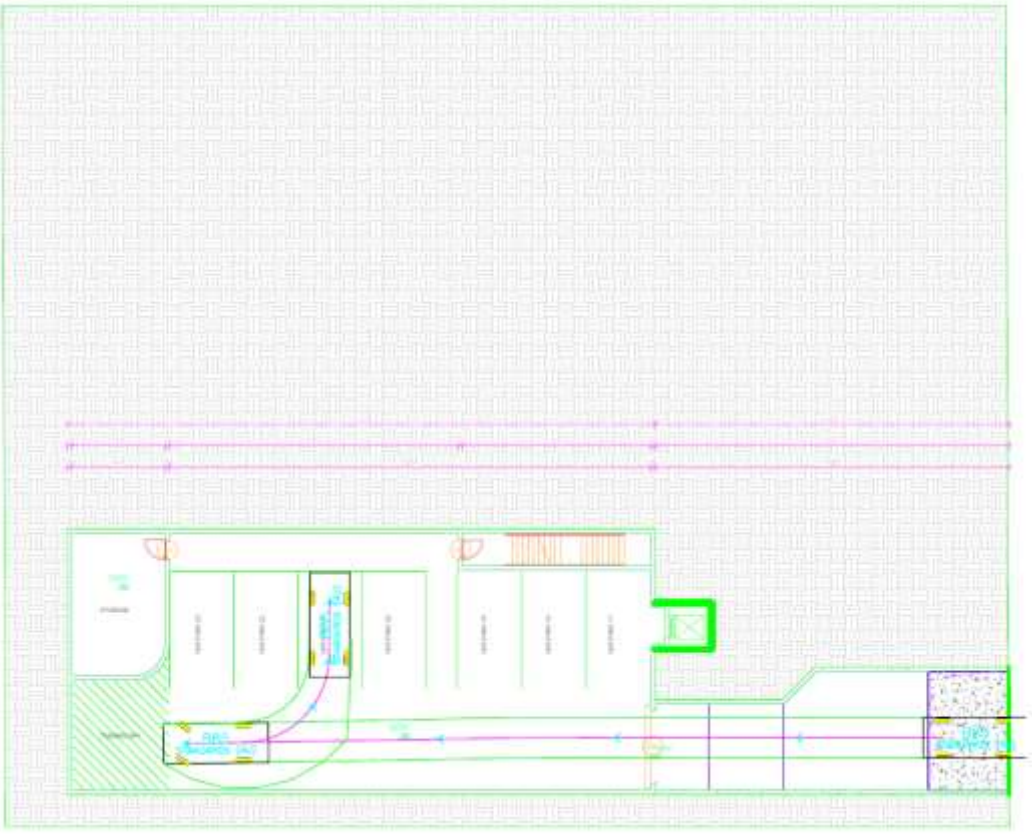

Figure 5-4: Swept Path Analysis for Circulation for Ingress

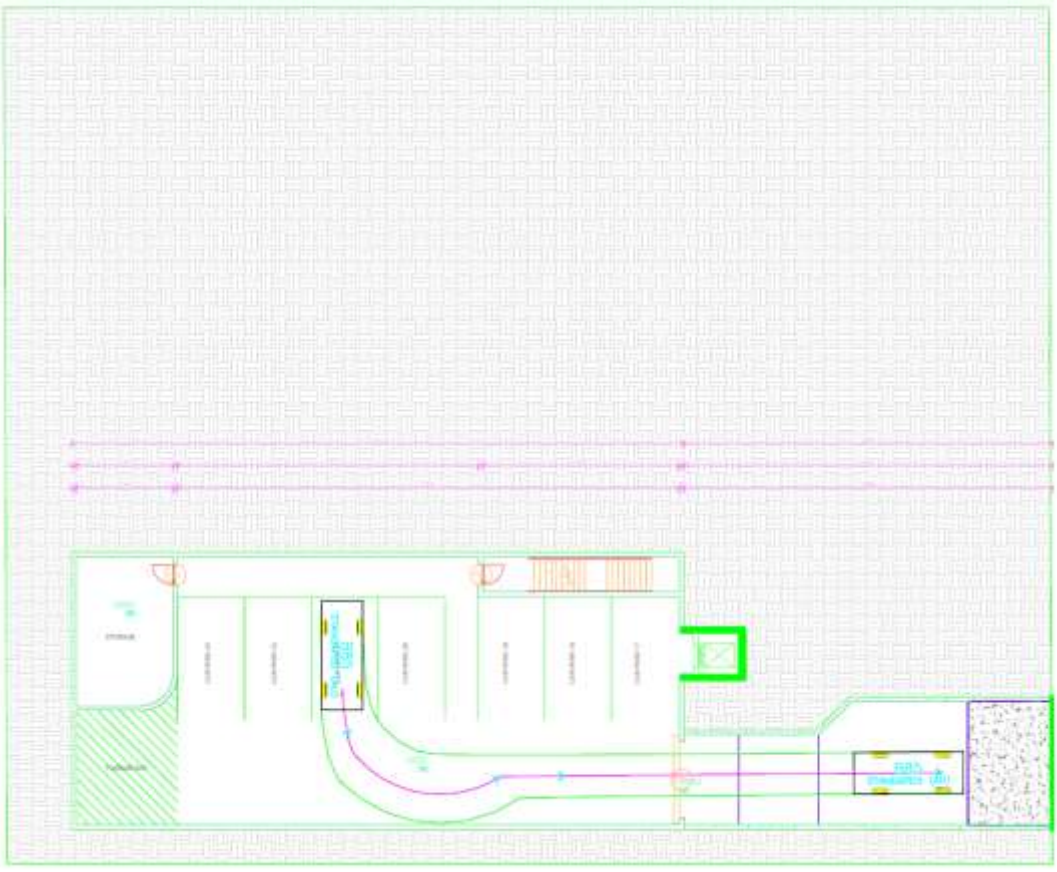

Figure 5-5: Swept Path Analysis for Circulation for Egress

The Swept Path Analysis confirms that the proposed layout of the childcare center accommodates the expected vehicle types safely and efficiently.

6 Conclusion

The Traffic Impact Assessment (TIA) for the proposed redevelopment of the childcare center at 42-44 Norfolk Road, Greenacre, analyzes the potential effects of the project, which involves combining Lot 100 and Lot B, adding a two-storey extension above the existing building, and constructing a basement carpark to enhance capacity and services.

The assessment reveals that the redevelopment is projected to generate a maximum of 32 two-way vehicle trips during the AM peak hour, alongside lower trip rates in the early afternoon and PM peak hours. These figures are consistent with typical traffic patterns for childcare centers and are unlikely to significantly impact the traffic conditions in the surrounding low-density residential area.

The project will include 23 on-site parking spaces—8 for staff and 15 for visitors ensuring adequate provision for drop-off and pick-up activities. Convenient access to Bus Route 913 along Waterloo Road will further reduce reliance on private vehicles, fostering a sustainable travel environment.

The surrounding road network, including Norfolk Road and Waterloo Road, is capable of accommodating the additional traffic, and the design of the basement carpark is intended to minimize on-street parking issues while ensuring safe routes for pedestrians and cyclists.

Overall, the redevelopment is expected to have minimal impact on local traffic and parking, aligns with relevant planning controls, and effectively balances community needs with the goal of minimizing disruption to the neighborhood, rendering the project feasible from a traffic and transport perspective.

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