

49 Frenchs Forest Road East, Frenchs Forest (Building 9) Proposed Oncology Centre

Assessment of Traffic and Parking Implications

Ref: 19020

Date: September 2019

Issue: A

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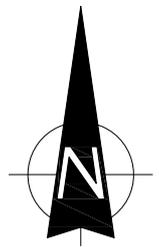
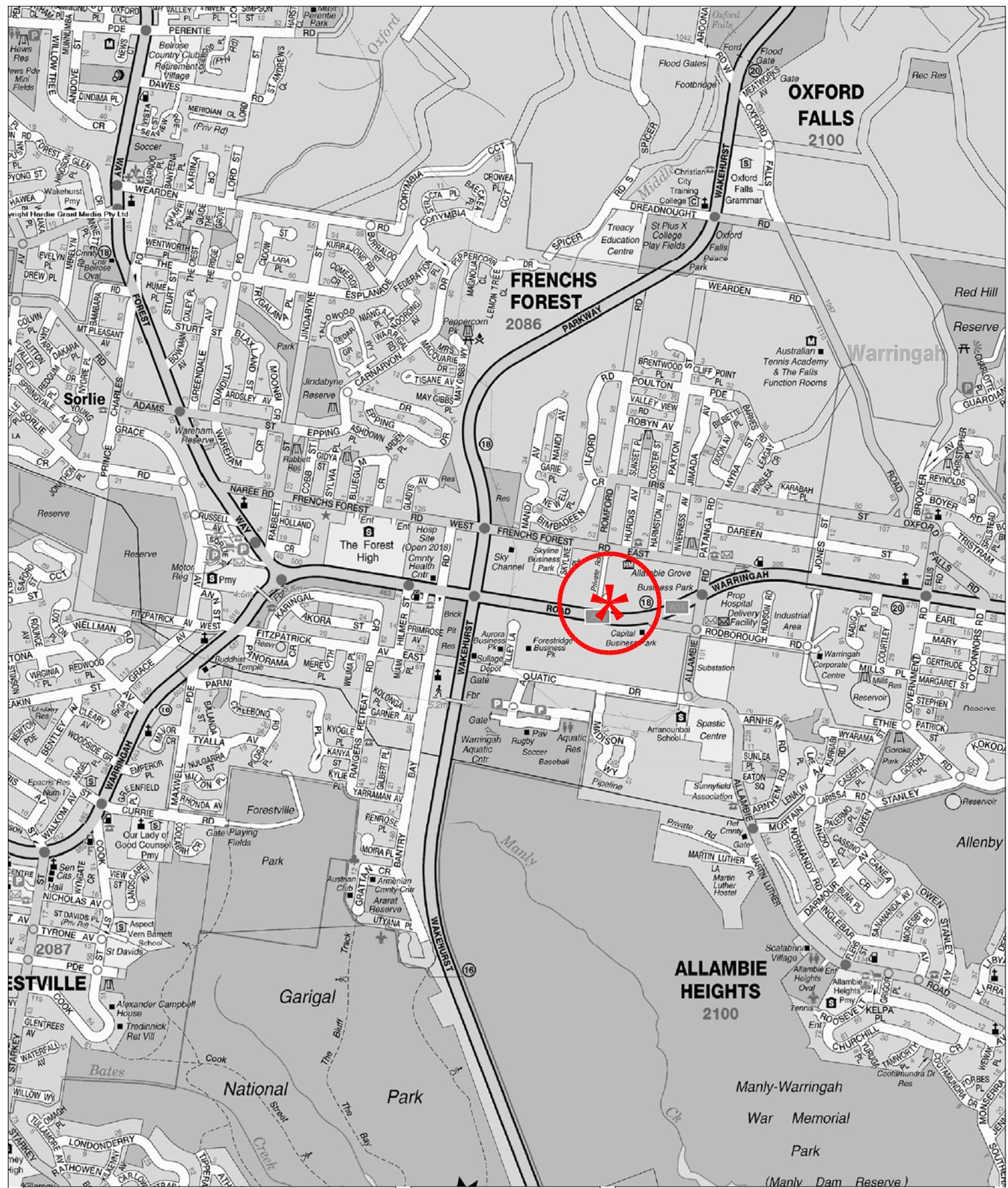
1.0 Introduction

This report has been prepared to accompany a Development Application to Northern Beaches Council for a proposed Oncology Centre on a site in Frenchs Forest Road East, Frenchs Forest (Figure 1).

The site is conveniently located in relation to public transport services and access to/from the arterial road system and will respond to the medical needs of the community and complement the Northern Beaches Medical to the west of the site.

The purpose of this report is to:

- ❖ describe the site, its context and the proposed development scheme
- ❖ describe the existing road network and traffic conditions
- ❖ assess the adequacy of the proposed parking provision
- ❖ assess the potential traffic implications
- ❖ assess the vehicle access, internal circulation and servicing arrangements



LOCATION

FIG 1

2.0 Proposed Development

2.1 Site, Context and Existing Use

The development site (Figure 2) is Lot 7 in DP 1020015, which occupies a rectangularly shaped area of some 1,774m² and has a frontage to the northern side of Warringah Road. The site is currently used as a storage as part of the Northern Beaches Hospital Stage 2 Road Network Enhancement project with construction vehicle access provided on the Warringah Road frontage.

The surrounding areas to the north comprise traditional residential dwellings while the area to the west, east and south generally comprises a mixture of old and new industrial and commercial buildings. Interspersed within this mixture are schools, aquatic centre, hotel, fast food and a small shopping precinct.

Vehicular access to the site is provided from Frenchs Forest Road East via two driveways. The eastern driveway provides for entry and the western driveway provides for exiting vehicles. All turning movements are permitted at the site driveways.

The adjacent lot (39 Frenchs Forest Road East) has been approved and will comprise of:

- modifications to the hotel to provide 2,329m² GFA
- a new Dan Murphy's of 1,368m² to replace the existing drive-through bottle shop
- an accommodation building with 100 rooms
- on-site parking of some 271 cars.

2.2 Proposed Development Scheme

The proposed development scheme involves the proposed Oncology Centre on Building 9 lot with access provided by a right-of-way connection to the existing Business Park service road onto Frenchs Forest Road East.

The proposed development is for:

- a new four-storey building for radiation oncology, including a total of 18 rooms used to see patients with the following breakdown:
 - o 7 consulting rooms
 - o 2 interview rooms
 - o 1 CT/PET CT room
 - o 1 MRI room
 - o 1 'radiation' bunker
 - o 2 nurse/treat rooms
 - o 2 treatment rooms
 - o 1 intermittent needle therapy/education room
 - o 2 blood bay rooms
- provision of 56 car parking spaces over 3 basement levels
- an ambulance bay
- a drop-off bay.

The expected staffing breakdown is summarised in the following:

Level	Department	Number of Doctor/ Supporting Staff at any one time
G	Consulting RO's	7
	Consulting MO's/ Hematology	6
	Patient Service Officers	5
	Pharmacists	1
	Allied Health external provider	4
	Management/additional administration	6
G & 1	Radiation Therapists	7
	Physicists	1.5
1	Engineers	1
1 & 2	Nurses RO/MO	7
2	Pathology suite – external provider	2
3	Imaging suite – radiographer	1
	Imaging suite – support staff	3
TOTAL		51.5

The above equates to 37.5 practitioners/professionals with the remaining 14 being supporting staff.

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The anticipated numbers of peak hourly and daily patient visitation for the proposed development are summarised in the following:

Department	Peak Hourly Patient Visitation	Daily Patient Visitation
Consulting ROs	4	40
Consulting MOs	3-4	36 – 48
Imaging suite	1	5
TOTAL	8-9	81 - 93

The unique elements of the proposed development involve:

- treatment of patients are generally through booked appointments
- average treatment time for ROs is 15 minutes with the patient being on site for some 30 minutes
- a maximum of 1 patient being treated in the bunker, 1 patient waiting and 1 patient preparing to leave.
- some patients will come from the adjacent hospitals and arriving via ambulance/patient transport services, rideshares, taxis, being dropped-off or walking.

Vehicle access from the service road will be provided on the north-western site frontage.

Details of the proposed scheme are shown and the plans prepared by Team2, which accompany the Development Application and are reproduced in part in Appendix A.

3.0 Existing Road Network and Traffic Conditions

3.1 Road Network

The road network serving the site (Figure 3) comprises:

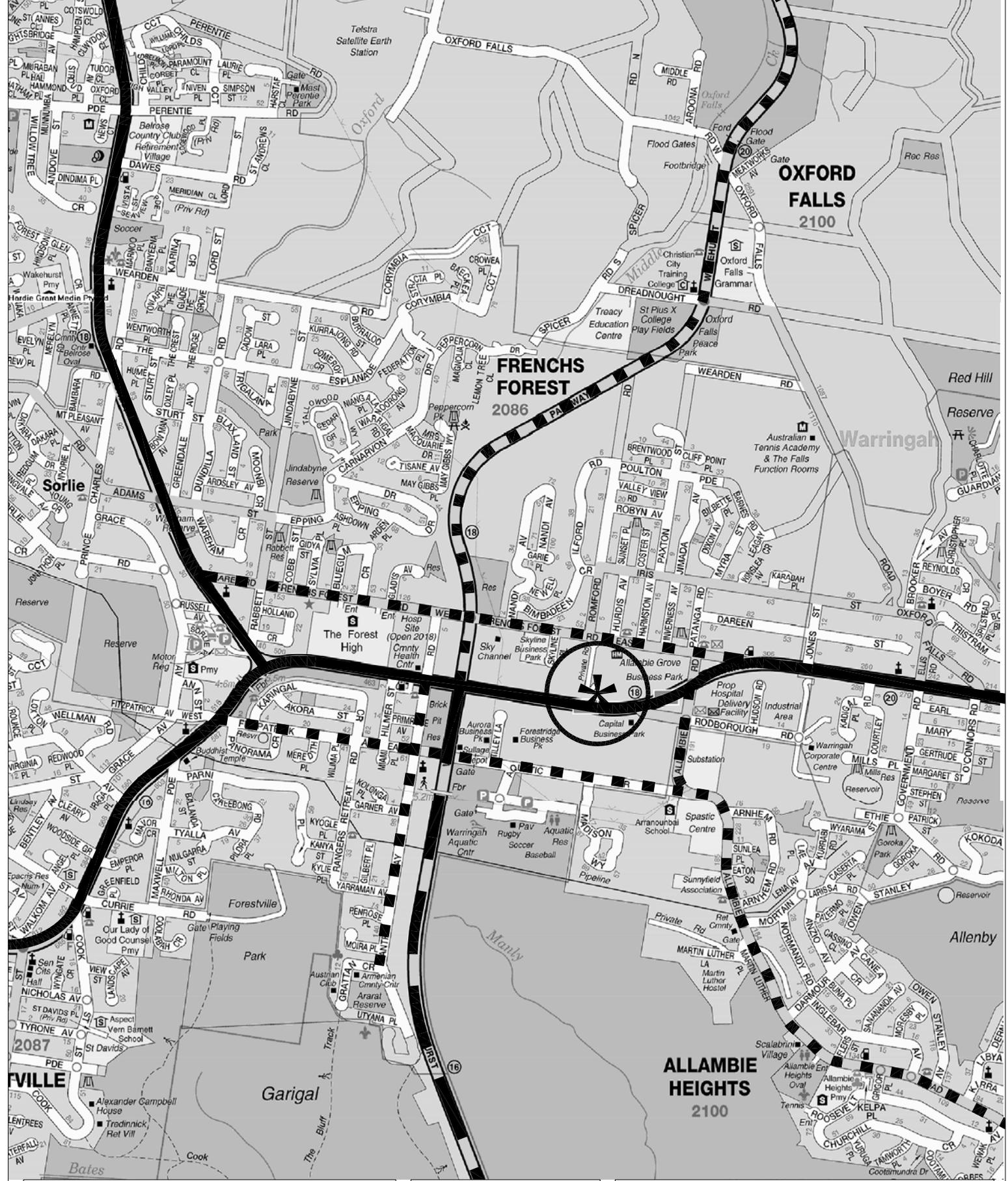
- ❖ *Warringah Road* – a State Road and arterial route connecting between Pittwater Road at Brookvale and across Roseville Bridge to Eastern Valley Way and Pacific Highway via Boundary Road
- ❖ *Forest Way* – a State Road and arterial route connecting between Warringah Road and Mona Vale Road
- ❖ *Wakehurst Parkway* – a State Road and arterial/sub-arterial route connecting between Pittwater Road at Narrabeen and Sydney Road at Balgowlah
- ❖ *Allambie Road* – a Regional Road and major collector road route connecting between Warringah Road and Condamine Street at North Manly
- ❖ *Frenchs Forest Road East* – a collector road route and connects to Warringah Road in the east and Wakehurst Parkway in the west.

Frenchs Forest Road East has a carriageway width of some 13m in the vicinity of the site and provides two traffic lanes in each direction. The road intersects with Romford Road/egress of the service road to form a signalised intersection, north of the site.

3.2 Traffic Controls

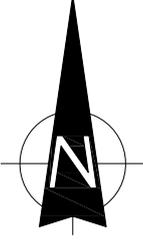
The existing traffic controls, which have been applied to the road system serving the site (Figure 4) comprise:

- ❖ the traffic signals at the intersections of:
 - Romford Road/Business Park Service road/Frenchs Forest Road East
 - Warringah Road/Wakehurst Parkway



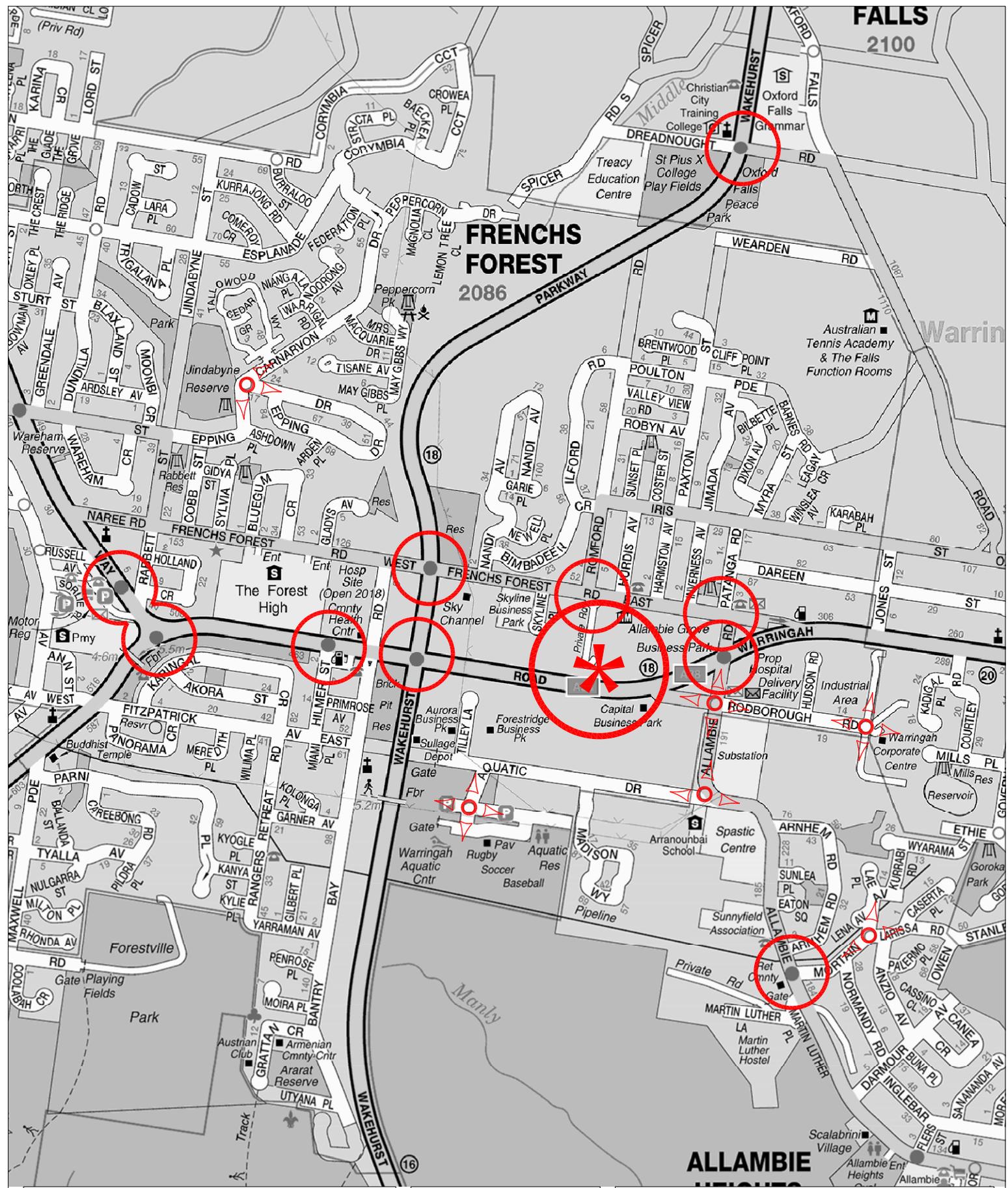
LEGEND

-  ARTERIAL
-  SUB-ARTERIAL
-  COLLECTOR



ROAD NETWORK

FIG 3



LEGEND

-  TRAFFIC SIGNAL CONTROL
-  ROUNDABOUT



TRAFFIC CONTROLS

FIG 4

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- Wakehurst Parkway/Frenchs Forest Road East
 - Allambie Road/Frenchs Forest Road East
 - Warringah Road/Frenchs Forest Road East
 - Allambie Road/Warringah Road
 - Patanga Road/Frenchs Forest Road East
- ❖ the give-way sign along Frenchs Forest Road East at the intersections of:
- Nandi Avenue
 - Skyline Place
 - Hurdis Avenue
 - Harmston Avenue
 - Inverness Avenue
- ❖ the 60 kmph speed restriction on the Highway and 50 kmph speed restriction on the local and collector roads

3.3 Traffic Conditions

An indication of traffic conditions on the road system serving the area is provided by data¹ published by RMS and surveys undertaken as part of other studies. The data published by RMS is expressed in terms of Annual Average Daily Traffic (AADT) is provided in the following:

	AADT
Warringah Road East of Daines Parade, Beacon	53,683

Traffic surveys have been undertaken at the Romford Road/Business Park Service road/Frenchs Forest Road East intersection during the Friday AM and PM peak periods.

The operational performance of this intersection has been assessed using SIDRA and

¹ *Traffic Volume Data for Sydney Region
Roads and Maritime Services*

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the results indicating satisfactory performances are provided in Appendix B and summarised in the following, while the criteria for interpreting the results are reproduced overleaf:

AM Peak		PM Peak	
LOS	AVD	LOS	AVD
B	22.2s	B	16.3s

The results of the SIDRA assessments indicate that this intersection operates satisfactorily and traffic conditions in the area are also generally quite satisfactory with vehicle and pedestrian movements facilitated by the traffic signal.

3.4 Transport Services

The site is ideally located in relation to bus services, which include the high-frequency bus services operated along the Warringah Road. Public transport services for the site area are provided by the bus routes operated by Sydney Buses and Forest Coach Lines with the principal routes being:

136	-	Mona Vale to Chatswood
169	-	Cromer to Wynyard
173	-	Narraweena/Cromer to Wynyard
193	-	Manly Wharf to Skyline
280	-	Mona Vale to Chatswood
E69	-	Manly Wharf to Skyline

In summary, it is apparent that the site is readily accessible by public transport, and it is likely that many staff will use public transport services for their daily commute to/from work and visitation to the site.

Details of the available public transport services are provided in Appendix C.

Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'B'	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
'C'	Satisfactory	Satisfactory but accident study required
'D'	Operating near capacity	Near capacity and Accident Study required
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
'F'	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below, which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabouts	Give Way and Stop Signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**¹ both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

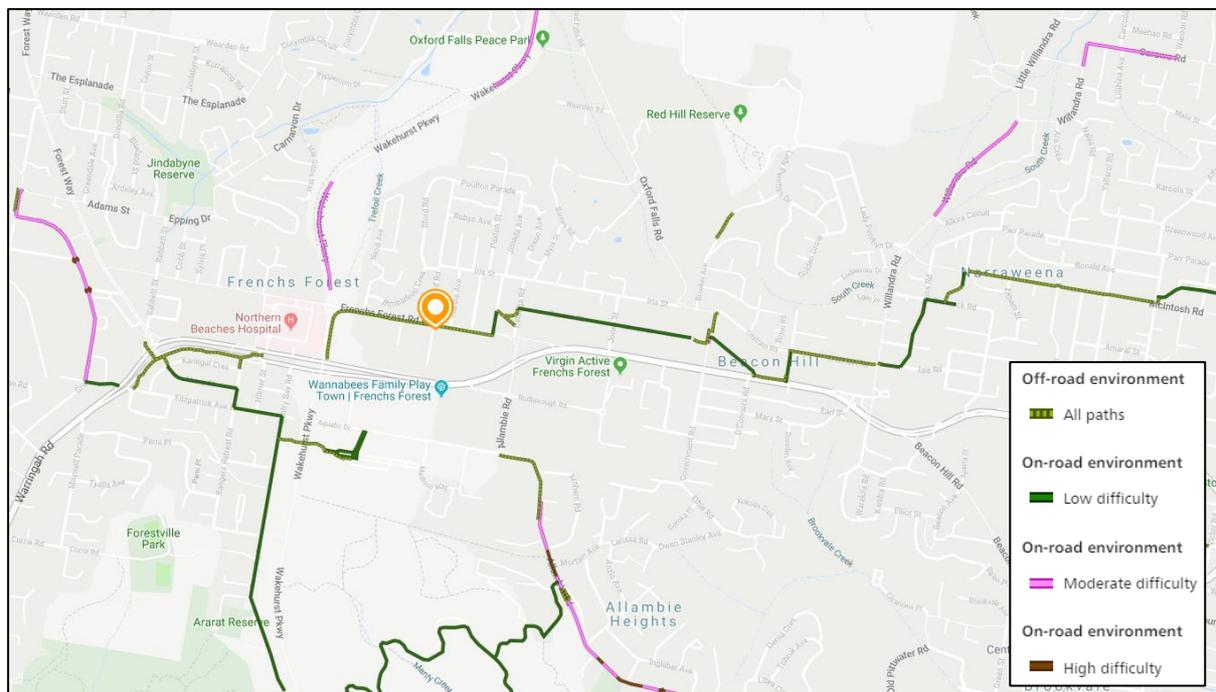
For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

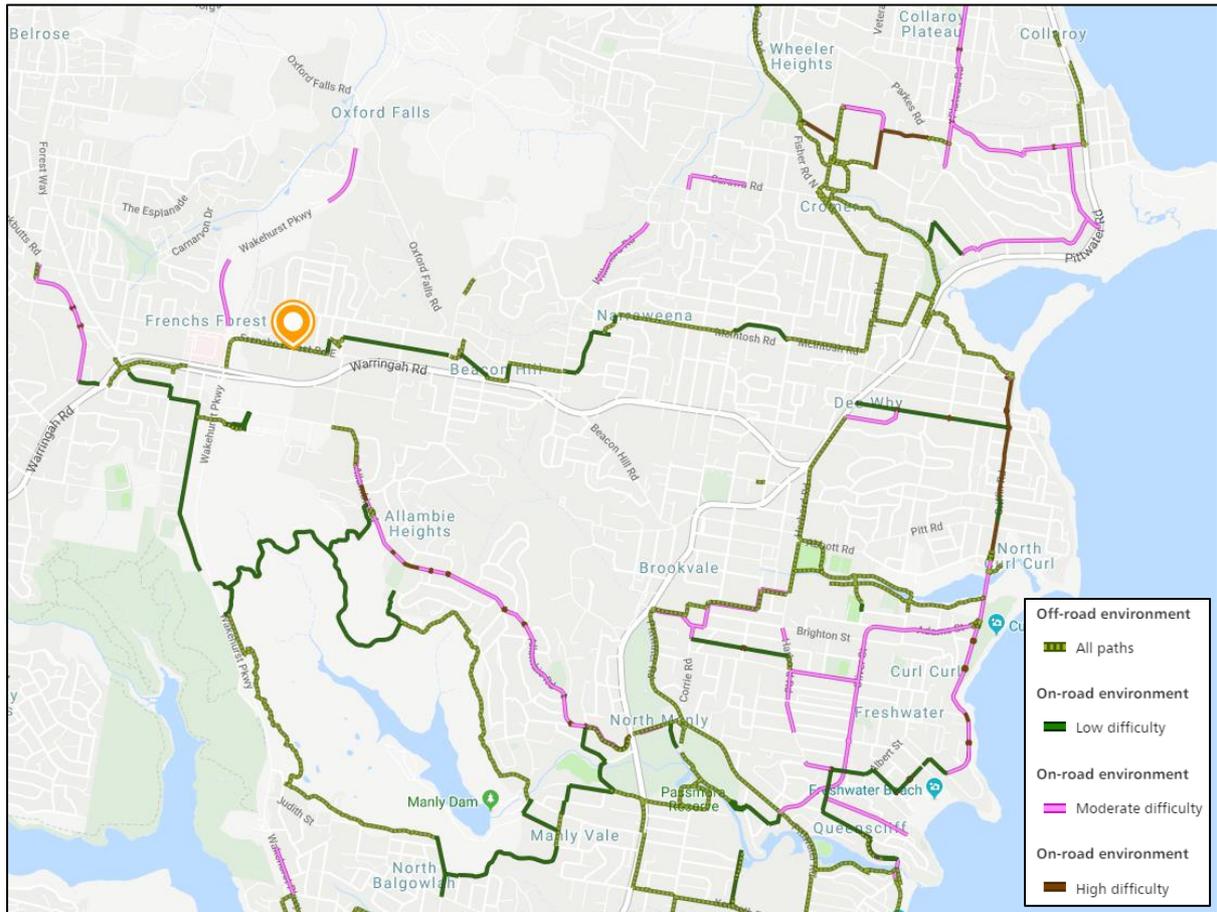
¹ the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs

3.5 Walking and Cycling Infrastructure

There are generally established 1.5m wide pedestrian footpaths and 3m wide shared paths on the northern and southern sides of the Frenchs Forest Road East respectively. 1.2-1.5m-wide pedestrian footpaths are available along on both sides of the other surrounding local roads in the vicinity of the site. The signalised pedestrian crossing at the intersection of Frenchs Forest Road East/Romford Road/service road provides formal crossing facilities in the immediate vicinity of the site.

Frenchs Forest Road East provides for an off-road local bicycle route that links with other on-road regional routes to the north and east. The local area is also served by local on-road routes along Inverness Avenue, Darren Street and Oxford Falls Road, ensuring a high level of local area accessibility to key destinations, including Cromer, Dee Why Wheeler Heights, Collaroy Plateau, Collaroy, Beacon Hill, Narraweena, Curl Curl, Brookvale, Manly and Queenscliff. Details of the surrounding bicycle network are provided in the following figure.



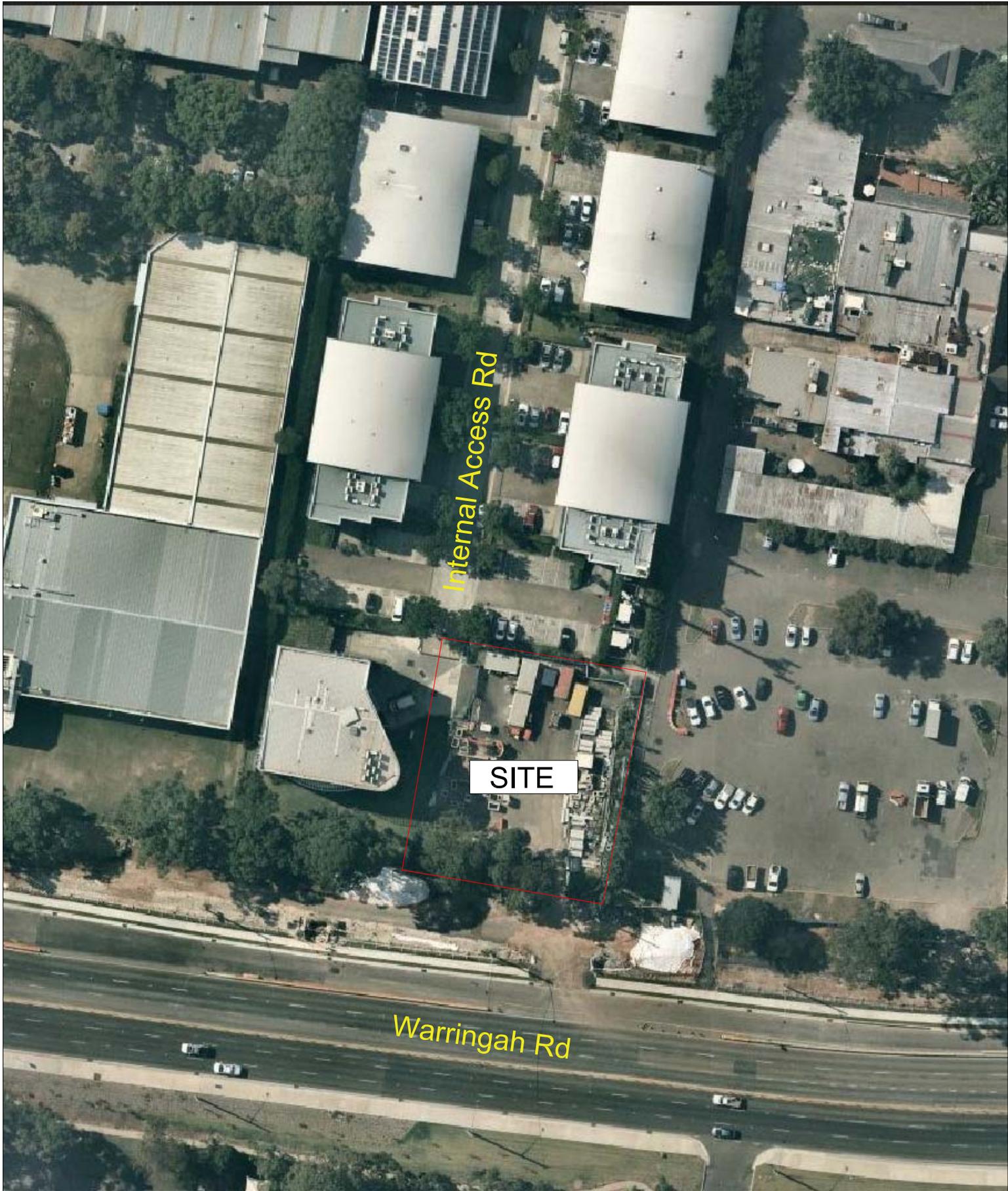


3.6 Existing Travel Circumstance

The Australian Bureau of Statistics (ABS) 2016 Census of Population and Housing – Place of Work by Method of Travel (NSW) data provides the most robust indication of existing staff travel patterns for the Frenchs Forest – Belrose localities.

A summary of the current mode shares for staff are shown as follows:

Train/Bus	8%
Walk	2%
Car Driver	83%
Car Passenger	4%
Bicycle	1%
Other (Motorcycle, Taxi, Car Share)	3%



LEGEND



SITE

FIG 2

4.0 Parking

4.1 Car Parking

Council's DCP specifies the following car parking provision in relation to proposed development:

Health consulting rooms - 3 spaces per room used to see patients

Application of this criteria to the proposed development would indicate the following:

18 rooms

54 spaces

The proposed development represents a special circumstance to some extent due to specialised building elements (e.g., radiology bunkers). It is considered in these circumstances that the parking provision should more realistically reflect the visitation characteristics as follows:

- maximum of 9 patients at any one time
- maximum of 52 staff at any one time

As such, it is proposed to provide a total of 56 spaces with the following breakdown:

- 10 spaces for patients on Basement Level 1
- 46 spaces for staff on Basement Levels 1 through 3

Based on the ABS data, 83% of staff will drive to work. Applying this rate to 52 staff will result in 44 staff utilising the on-site car spaces.

As such, the proposed provision of 56 car spaces is in accordance with Council's DCP, appropriate and can accommodate the car parking demand of the Oncology Centre.

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Two spaces designated for the proposed development will be suitable for disabled drivers in accordance with BCA. A separate ambulance/patient transport bay will also be provided on the ground level.

4.2 Bicycle Parking

Council's DCP does not provide any bicycle requirements for a health and medical centre use. As such, reference has been made to the 'Planning Guidelines for Walking and Cycling' (NSW Government 2004) which suggest the following bicycle parking provisions:

- * Staff (long-term use) – 5% to 10% of practitioners, professional

Applying the above rates to 37.5 practitioners/professionals, the proposed development should provide a minimum total of 2 bicycle spaces.

The bicycle parking facilities are proposed to be located on the ground level with convenient access via Frenchs Forest Road East and the service road.

5.0 Traffic

There are no traffic generation criteria available in relation to the special nature of the proposed development. The possible comparable of 'Extended Hours Medical Centre' use as contained in the RTA Guide to Traffic Generating Development is not appropriate as that involves significant patient movements during the morning and afternoon peak periods (i.e., not the case with the proposed development).

The traffic generated by the development during the morning and afternoon peak periods will be essentially limited to staff arrivals and departures, although not all staff will be present at the same time. To provide a conservative assessment, it is assumed that all 52 staff will arrive and depart during the peak periods.

The projected traffic generation outcome on the basis of the ABS travel mode share data, is estimated as follows:

Travel Mode	Mode Share	Staff	Peak Hour Trip Generation			
			AM Peak		PM Peak	
			IN	OUT	IN	OUT
Train/Bus	8%	4	-			
Walk	2%	1	-			
Car Driver	83%	43	43	-	-	43
Car Passenger	4%	2	4	4	4	4
Bicycle	1%	1	-			
Other (Motorcycle, Taxi, Car Share)	3%	1	2	2	2	2
Total	100%	52	49	6	6	49

A SIDRA assessment of the relevant intersections with the projected additional volumes from the adjacent and proposed developments reveals that satisfactory operations will continue as follows:

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AM Peak		PM Peak	
LOS	AVD	LOS	AVD
B	22.4s	B	17.8s

The traffic generation of this order of magnitude being equivalent to some 1 vehicle every minute during the peak hours is minor in the context of the local and arterial road system and will not act to create unacceptable traffic congestion or conflict either at the vehicle access point or at adjacent intersections.

6.0 Access, Internal Circulation and Servicing

6.1 Access

The proposed vehicle access to/from the existing service road comprises of a 5.5m wide driveway and the access ramp in accordance with AS2890.1. The driveway will be located at the southern end of the service road at the north-western site boundary. It is proposed to provide a roundabout at the end of the road to reduce the conflicts between the traffic movements associated with buildings 9 and 10. The driveway complies with the design and sight distance requirements of AS 2890.1 and the existing service road is straight and level at this location.

The existing service road on Frenchs Forest Road East will be utilised and it is noted that this access has operated satisfactorily for more than 10 years without any operational difficulties and further improved with the signalisation in 2018.

6.2 Internal Circulation

The design of the proposed internal circulation arrangements accords with the requirements of AS2890.1 and AS2890.6. The proposed parking manoeuvring arrangements will be quite satisfactory as confirmed by the turning path assessment for a B85 and B99 car manoeuvres in the carpark which is provided in Appendix D.

6.3 Servicing

Waste bins will be removed from the ground-level drop-off area by up to 6.4m private contractor's small rigid waste vehicle (SRV), with the waste collection taking place outside of the peak hours. A waste vehicle management plan will be in place to ensure appropriate use and prevent overuse of the drop-off space. The objective is to always appropriately manage service vehicle and trade vehicle activity so that no more than one vehicle is using the drop-off space at any one time.

The building manager will prepare the bins for collection and coordinate with collection

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vehicle arrival so that bins do not impede vehicle access into the drop-off space or service road.

Other servicing of the centre related to deliveries, courier activity, maintenance, etc. will only involve occasional small delivery vehicles (van, utes, etc.) can be reliant on the available off-street staff parking.

Details of the turning path assessment for a 6.4m SRV and a 7.3 bariatric ambulance accessing the ambulance space are provided in Appendix D.

7.0 Workplace Travel Plan

7.1 Workplace Travel Plan

Workplace Travel Plans (WTPs) has proven to be a successful way of changing travel behaviour for residential, commercial and medical centre developments throughout Australia and overseas. A WTP is a way in which a development manages the transport needs of staff and visitors. The aim of the plan is to reduce the environmental impact of travel to and from a given site and in association with its operation. In essence, the plans encourage more efficient use of motor vehicles as well as alternatives to single-occupant car usage. The WTP would put in place measures to further influence the travel patterns of those people working at the development with a view to encouraging modal shift away from cars.

7.2 Actions

To reduce car parking demand from the development, the most straightforward actions should be addressed first:

i. Implementation of the WTP

- ❖ Appoint a Travel Plan Coordinator (TPC) to ensure the successful implementation and monitoring of the WTP.
- ❖ Conduct annual travel surveys to establish travel patterns in the area and assess the success of the WTP. This would be managed by the appointed TPC. Allow surveys to incorporate suggestions from staff to improve green travel arrangements.
- ❖ Create a site-specific WTP website.

ii. Increase walking, running and cycling to work and other destinations (errands, recreational, social) by staff.

- ❖ Implementation of a subsidised bicycle share membership plan (Lime, Mobike and oBike).

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- ❖ Provision of bicycle spaces based on the Planning Guidelines for Walking and Cycling requirements.
- ❖ Provision of fully serviced end of trip facilities such as showers and changeroom (including supplying laundered towels, irons and ironing boards, hair dryers, toiletries, etc.).
- ❖ Provision of workplace toolkits including puncture repair equipment and bicycle pumps and a bicycle repair station.
- ❖ Promote bicycle-friendly shops in Frenchs Forest. A loyalty card program could be organised between staff who cycle and cafes/ shops.

iii. Increase public transport use:

- ❖ Provide interactive timetables with Live NSW traffic and public transport conditions on-site to promote public transport usage.
- ❖ Allow for access to umbrellas and ponchos in case of wet weather.
- ❖ Allocate space for an on-site kiosk station.

iv. Increase car share:

- ❖ Implementation of a carpool system, which could include encouraging staff to participate in a peak-hour car-pooling club to drive to a nearest station/bus interchange or common residence location during the peak hours. This may be coordinated by a 'transport champion,' an appointed worker, building manager or formally appointed TPC.
- ❖ Provide priority parking or reduced parking costs for staff that car-pool.

v. Increase staff and visitor awareness and knowledge of available transport options:

- ❖ Provision of a Transport Access Guide (TAG) which should be given to every staff and regular visitor. The TAG should include public transport timetables, stop/ station locations, walking times/ distances, etc.
- ❖ Provide real-time information on public transport arrival/ departure times with information screens in the lobby along with the local weather and a rolling

newsfeed. A similar display could be arranged to show bus departure times from the nearby bus stops along Frenchs Forest Road East.

- ❖ A half-yearly newsletter could be provided to every staff for up to two years after occupation bringing the latest news on sustainable travel initiatives in the area.

7.3 Monitoring and Reviewing

There is no standard methodology for the implementation and management of sustainable transport initiatives. However, as part of the WTP, these initiatives should be monitored to ensure that it is achieving the desired benefits. The monitoring of the WTP would require travel surveys to be undertaken with a focus to establish travel patterns, including mode share of trips to and from the site. The implementation of the WTP will need a formal TPC, who will have responsibility for developing, implementing and monitoring the WTP. The TPC will be an appointed staff member of the proposed development or an independent expert. It will also be necessary to provide feedback to staff, tenants and owners to ensure that they can see the benefits of sustainable transport.

There are several key elements to the development and implementation of a successful WTP. These include:

- ❖ Communication – Good communication is an essential part of the WTP. It will be necessary to explain the reason for adopting the plan, promote the benefits available and provide information about the alternatives to driving alone.
- ❖ Commitment – WTPs involve changing established habits or providing the impetus for people in new developments to choose a travel mode other than private car use. To achieve cooperation, it is essential to promote positively the wider objectives and benefits of the plan. This commitment includes the provision of the necessary resources to implement the plan, beginning with the introduction of the 'carrots' or incentives for changing travel modes upon occupation.
- ❖ Building consensus – It will be necessary to obtain broad support for the introduction of the plan from the tenants.

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Once the plan has been adopted, it is essential to maintain interest in the scheme. Each new initiative in the plan will need to be publicised and marketing of the project will be important.

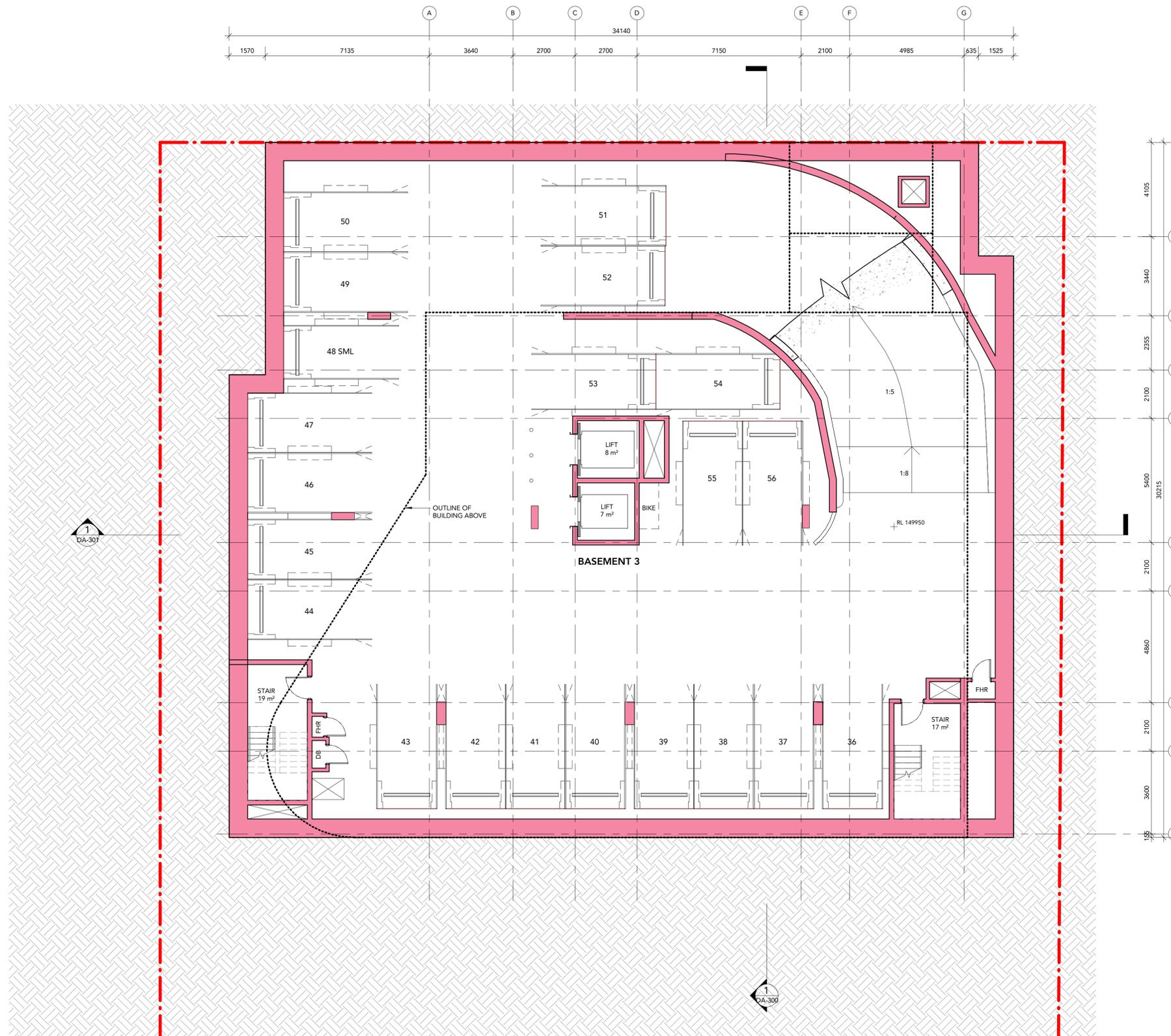
8.0 Conclusion

A Development Application is to be submitted to Northern Beaches Council for a proposed Oncology Centre on a site in Frenchs Forest Road East, Frenchs Forest. The traffic, transport and parking assessment provided in this report confirms that:

- ❖ the traffic generation of the proposed development will not present any adverse traffic implications and traffic-related environmental impacts
- ❖ the proposed parking provision will be adequate
- ❖ the existing vehicle access on Frenchs Forest Road East will be suitable and appropriate
- ❖ the proposed internal circulation and servicing arrangements will be in accordance with the current AS2890.1 and 6 design standards
- ❖ the proposed servicing arrangements are suitable

Appendix A

Architectural Plans



1 Floor Plan - Basement 3
Scale: 1 : 100

DEVELOPMENT APPLICATION		
Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
4	ISSUE FOR DA	05.09.19

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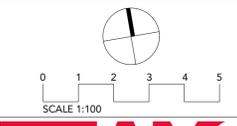
- DRAWING LEGEND:**
1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
 2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
 3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
 4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

- LEGENDS:**
- PROPOSED WALLS & FLOORS
 - NEIGHBOURING EXISTING BUILDINGS
 - EXISTING PLANTING
 - PROPOSED PLANTING
 - DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client:
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder:
Eriylan
1/27 Hotham Parade
Artarmon NSW 2064



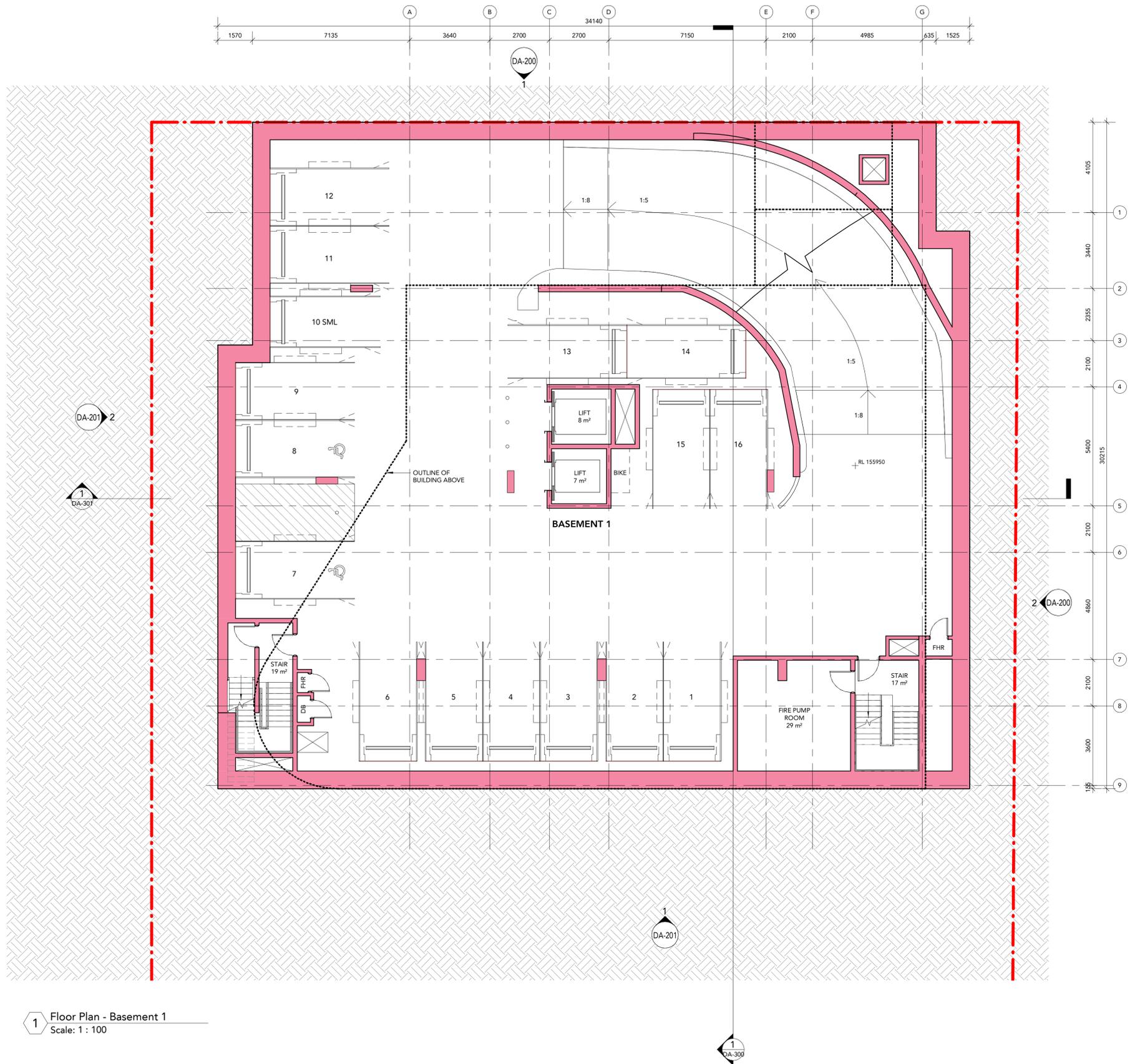
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Reg NSW: 9940 Reg Vic: 19340

Project: Maui Oncology
Warringah Road & Wakehurst Parkway

Title: FLOOR PLAN - BASEMENT 3

Project #	Scale	Date	Check
856	As	05/09/19	Autochecker
Designer	indicated		

DA-100 4



1 Floor Plan - Basement 1
Scale: 1 : 100

DEVELOPMENT APPLICATION		
Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
4	ISSUE FOR DA	05.09.19

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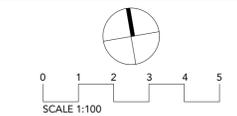
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4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

- LEGENDS:**
- PROPOSED WALLS & FLOORS
 - NEIGHBOURING EXISTING BUILDINGS
 - EXISTING PLANTING
 - PROPOSED PLANTING
 - DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client:
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder:
Eriylan
1/27 Hotham Parade
Artarmon NSW 2064



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Project: Maui Oncology
Warringah Road & Wakehurst
Parkway

Title: FLOOR PLAN - BASEMENT 1

Project #:	Scale:	Doc.:	Clk.:
856	As	@A1	Auth@checker
Designer:	indicated	Rev:	4

DA-102

DRAWING STATUS:		
DEVELOPMENT APPLICATION		
Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
4	ISSUE FOR DA	05.09.19

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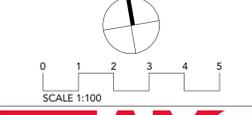
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NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

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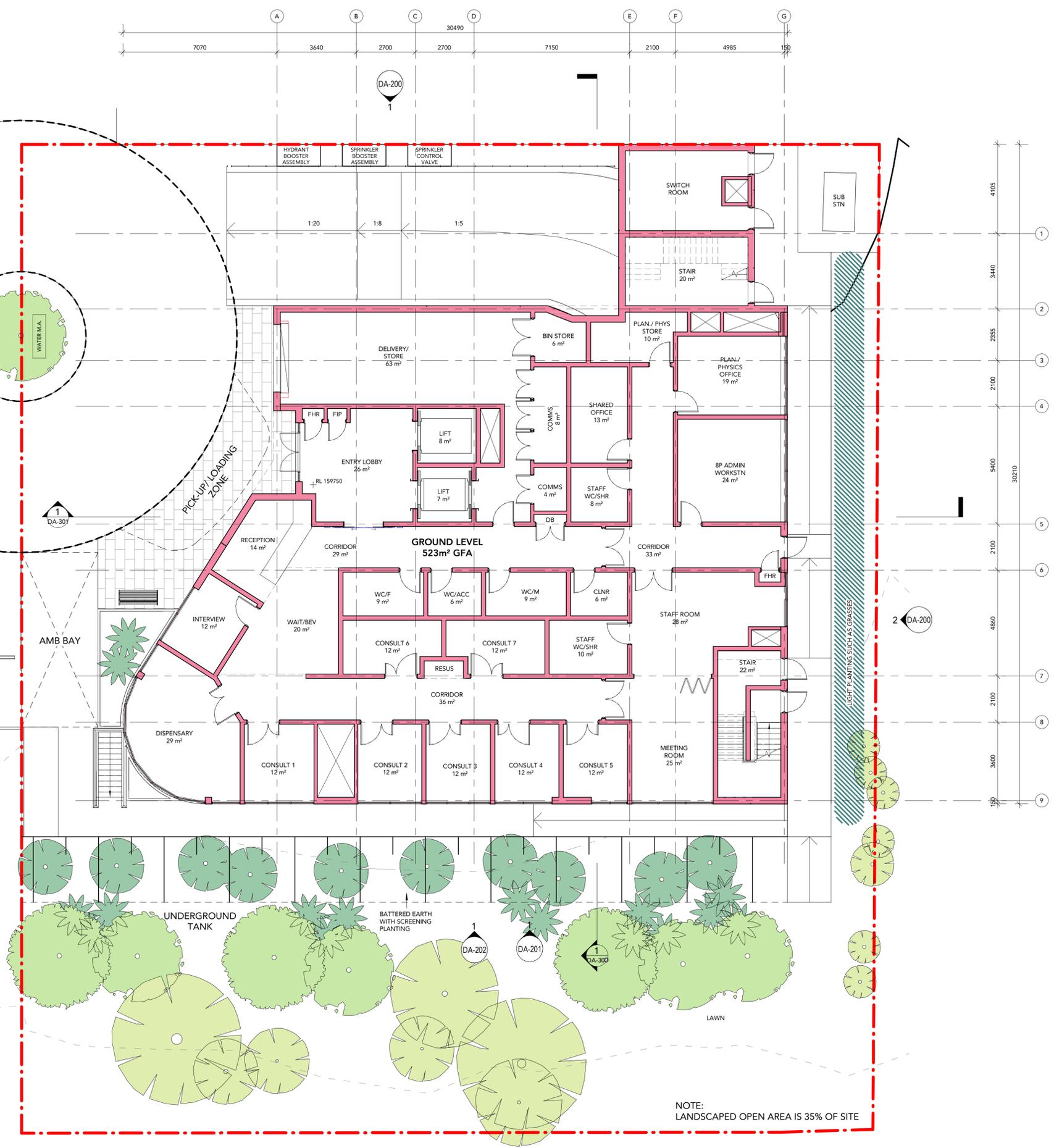


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Project: Maui Oncology
 Warringah Road & Wakehurst Parkway

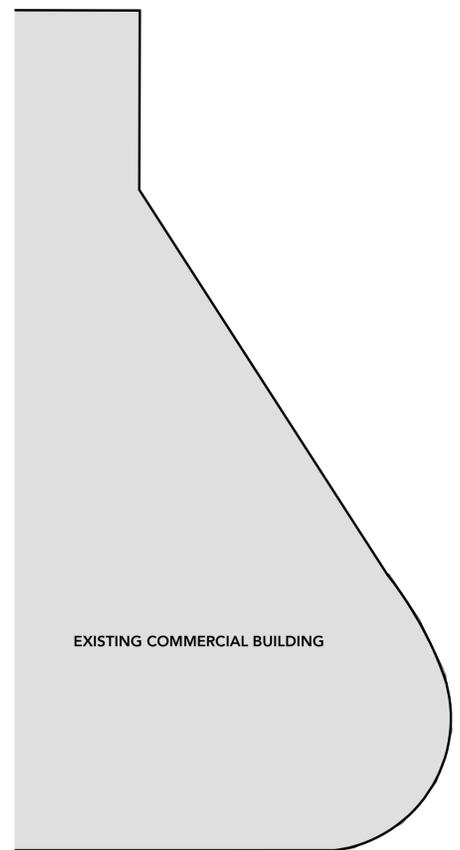
Title:
 FLOOR PLAN - GROUND

Project #	Scale	Date	Drawn	Checked
856	As		indicated	indicated
Drawn by:				
DA-103				4



NOTE:
 LANDSCAPED OPEN AREA IS 35% OF SITE

1 Floor Plan - Ground Floor
 Scale: 1 : 100



DRAWING STATUS:

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Draft DA Issue	30.08.19
3	ISSUE FOR DA	05.09.19

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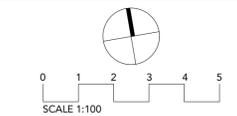
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- LEGENDS:**
- PROPOSED WALLS & FLOORS
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NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

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 Reg NSW: 9940 Reg Vic: 19340

Project: Maui Oncology
 Warringah Road & Wakehurst
 Parkway

Title:
 FLOOR PLAN - LEVEL 2

Project #	Scale	Doc	Clid
856	As	Auth	Checker

DA-105 **3**

1 Floor Plan - Level 2
 Scale: 1 : 100

Appendix C

SIDRA Output

MOVEMENT SUMMARY

 **Site: 101 [EX AM ROMFORD RD/FRENCHS FOREST ROAD E]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: SITE ACCESS												
1	L2	12	4.0	0.104	48.4	LOS D	0.6	4.0	0.97	0.67	0.97	21.5
2	T1	1	4.0	0.104	45.0	LOS D	0.6	4.0	0.97	0.67	0.97	22.9
3	R2	12	4.0	0.096	48.5	LOS D	0.5	3.7	0.97	0.67	0.97	20.9
Approach		24	4.0	0.104	48.3	LOS D	0.6	4.0	0.97	0.67	0.97	21.3
East: FRENCHS FOREST ROAD E												
5	T1	692	4.0	0.551	20.0	LOS B	15.4	111.4	0.79	0.70	0.79	41.9
6	R2	78	4.0	0.551	29.0	LOS C	9.8	70.7	0.83	0.74	0.83	39.8
Approach		769	4.0	0.551	20.9	LOS B	15.4	111.4	0.79	0.70	0.79	41.7
North: ROMFORD RD												
7	L2	118	4.0	0.542	36.6	LOS C	10.0	72.4	0.91	0.82	0.91	35.0
9	R2	143	4.0	0.542	36.5	LOS C	10.0	72.4	0.91	0.82	0.91	35.2
Approach		261	4.0	0.542	36.5	LOS C	10.0	72.4	0.91	0.82	0.91	35.1
West: FRENCHS FOREST ROAD E												
10	L2	87	4.0	0.434	22.8	LOS B	11.1	80.6	0.72	0.66	0.72	43.7
11	T1	678	4.0	0.434	17.2	LOS B	11.3	81.5	0.72	0.64	0.72	43.7
Approach		765	4.0	0.434	17.9	LOS B	11.3	81.5	0.72	0.64	0.72	43.7
All Vehicles		1820	4.0	0.551	22.2	LOS B	15.4	111.4	0.78	0.69	0.78	40.8

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P2	East Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P3	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
All Pedestrians		158	39.3	LOS D			0.94	0.94	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [EX PM ROMFORD RD/FRENCHS FOREST ROAD E]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: SITE ACCESS												
1	L2	49	4.0	0.419	50.3	LOS D	2.3	16.6	1.00	0.74	1.00	21.1
2	T1	1	4.0	0.419	46.8	LOS D	2.3	16.6	1.00	0.74	1.00	22.5
3	R2	27	4.0	0.227	49.4	LOS D	1.2	8.8	0.98	0.71	0.98	20.7
Approach		78	4.0	0.419	49.9	LOS D	2.3	16.6	0.99	0.73	0.99	20.9
East: FRENCHS FOREST ROAD E												
5	T1	740	4.0	0.475	12.7	LOS A	13.2	95.7	0.64	0.58	0.64	47.0
6	R2	83	4.0	0.475	20.4	LOS B	8.5	61.5	0.68	0.65	0.68	44.5
Approach		823	4.0	0.475	13.5	LOS A	13.2	95.7	0.65	0.59	0.65	46.7
North: ROMFORD RD												
7	L2	59	4.0	0.465	44.2	LOS D	5.4	39.2	0.96	0.79	0.96	32.3
9	R2	72	4.0	0.465	44.2	LOS D	5.4	39.2	0.96	0.79	0.96	32.5
Approach		131	4.0	0.465	44.2	LOS D	5.4	39.2	0.96	0.79	0.96	32.4
West: FRENCHS FOREST ROAD E												
10	L2	93	4.0	0.379	16.5	LOS B	9.7	70.1	0.58	0.56	0.58	47.7
11	T1	736	4.0	0.379	11.0	LOS A	9.8	70.9	0.58	0.53	0.58	48.3
Approach		828	4.0	0.379	11.6	LOS A	9.8	70.9	0.58	0.54	0.58	48.2
All Vehicles		1860	4.0	0.475	16.3	LOS B	13.2	95.7	0.65	0.59	0.65	44.1

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P2	East Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P3	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
All Pedestrians		158	39.3	LOS D			0.94	0.94	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 Site: 101 [FUT AM ROMFORD RD/FRENCHS FOREST ROAD E]

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: SITE ACCESS												
1	L2	16	2.0	0.141	48.7	LOS D	0.8	5.4	0.97	0.69	0.97	21.4
2	T1	1	2.0	0.141	45.2	LOS D	0.8	5.4	0.97	0.69	0.97	22.8
3	R2	16	2.0	0.132	48.7	LOS D	0.7	5.0	0.97	0.69	0.97	20.8
Approach		33	2.0	0.141	48.6	LOS D	0.8	5.4	0.97	0.69	0.97	21.2
East: FRENCHS FOREST ROAD E												
5	T1	828	4.0	0.660	20.5	LOS B	20.3	147.0	0.83	0.74	0.83	41.6
6	R2	85	4.0	0.660	31.4	LOS C	11.2	81.4	0.89	0.79	0.89	38.6
Approach		913	4.0	0.660	21.5	LOS B	20.3	147.0	0.84	0.75	0.84	41.3
North: ROMFORD RD												
7	L2	129	4.0	0.645	39.1	LOS C	11.5	82.9	0.95	0.83	0.95	34.0
9	R2	156	4.0	0.645	39.1	LOS C	11.5	82.9	0.95	0.83	0.95	34.2
Approach		285	4.0	0.645	39.1	LOS C	11.5	82.9	0.95	0.83	0.95	34.1
West: FRENCHS FOREST ROAD E												
10	L2	95	4.0	0.515	22.4	LOS B	14.1	102.4	0.73	0.68	0.73	44.0
11	T1	856	4.0	0.515	16.8	LOS B	14.3	103.4	0.73	0.66	0.73	43.9
Approach		951	4.0	0.515	17.4	LOS B	14.3	103.4	0.73	0.66	0.73	43.9
All Vehicles		2182	4.0	0.660	22.4	LOS B	20.3	147.0	0.81	0.72	0.81	40.7

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P2	East Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P3	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
All Pedestrians		158	39.3	LOS D			0.94	0.94	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 Site: 101 [FUT PM ROMFORD RD/FRENCHS FOREST ROAD E]

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: SITE ACCESS												
1	L2	54	4.0	0.457	50.4	LOS D	2.5	18.2	1.00	0.75	1.00	21.0
2	T1	1	4.0	0.457	47.0	LOS D	2.5	18.2	1.00	0.75	1.00	22.5
3	R2	30	4.0	0.248	49.5	LOS D	1.3	9.6	0.98	0.72	0.98	20.7
Approach		85	4.0	0.457	50.1	LOS D	2.5	18.2	0.99	0.74	0.99	20.9
East: FRENCHS FOREST ROAD E												
5	T1	807	4.0	0.659	14.2	LOS A	13.9	100.8	0.68	0.61	0.68	45.9
6	R2	91	4.0	0.659	29.1	LOS C	11.7	84.7	0.86	0.78	0.86	39.7
Approach		897	4.0	0.659	15.7	LOS B	13.9	100.8	0.70	0.62	0.70	45.1
North: ROMFORD RD												
7	L2	64	4.0	0.645	48.8	LOS D	6.3	45.9	1.00	0.83	1.06	30.9
9	R2	78	4.0	0.645	48.7	LOS D	6.3	45.9	1.00	0.83	1.06	31.1
Approach		142	4.0	0.645	48.8	LOS D	6.3	45.9	1.00	0.83	1.06	31.0
West: FRENCHS FOREST ROAD E												
10	L2	101	4.0	0.130	13.4	LOS A	2.7	19.3	0.45	0.59	0.45	48.1
11	T1	802	4.0	0.652	11.8	LOS A	21.3	154.3	0.68	0.63	0.68	47.8
Approach		903	4.0	0.652	12.0	LOS A	21.3	154.3	0.66	0.63	0.66	47.9
All Vehicles		2027	4.0	0.659	17.8	LOS B	21.3	154.3	0.71	0.64	0.72	43.1

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

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

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P2	East Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
P3	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94	
All Pedestrians		158	39.3	LOS D			0.94	0.94	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix C

Transport Services

Buses around the Northern Beaches



City

B Catch a B1 B-Line bus from Warringah Mall, Pittwater Rd, Stand B to City Wynyard.

F Catch an F1 ferry from Manly Wharf to Circular Quay.

Manly

B Catch a bus from Warringah Mall, Pittwater Rd, Stand A to Manly.

Palm Beach

B Catch a B1 B-Line bus from Warringah Mall, Pittwater Rd, Stand C to Mona Vale.

Change at Mona Vale for connecting bus services to Palm Beach.

Chatswood

B Catch a B1 B-Line bus to Neutral Bay Junction.

Change at Neutral Bay Junction for a 143, 144 or 257 bus to Chatswood.

*Images from Destination NSW



- B-Line stop
- Bus route terminus
- Bus route number
- Train station
- Ferry wharf

For real time service and connection information plan your trip at transportnsw.info



Sydney rail network



M Metro **T** Trains



Sydney metro and train lines



Metro North West Line
Chatswood
Tallawong



T1 North Shore & Western Line
North Shore
Western
Richmond



T2 Inner West & Leppington Line
Inner West
Leppington
City



T3 Bankstown Line
Liverpool
Lidcombe
City



T4 Eastern Suburbs & Illawarra Line
Eastern Suburbs
Illawarra
Cronulla



T5 Cumberland Line
Leppington
Richmond



T6 Carlingford Line
Carlingford
Clyde



T7 Olympic Park Line
Olympic Park
Lidcombe



T8 Airport & South Line
Airport
South
City



T9 Northern Line
Northern
Gordon

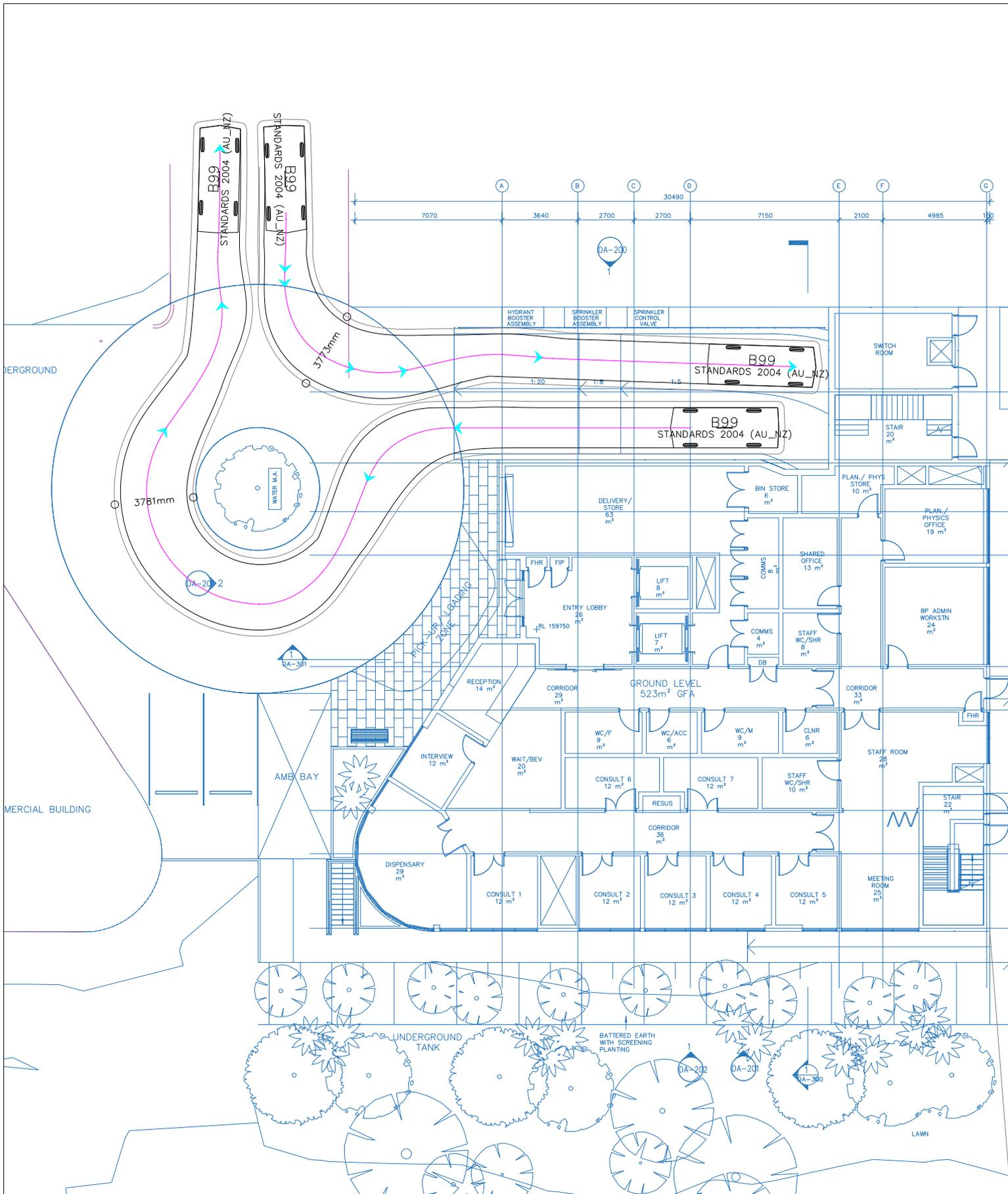


Check timetables and trip planners for train services and connections

Visit transportnsw.info

Appendix D

Turning Path Assessment

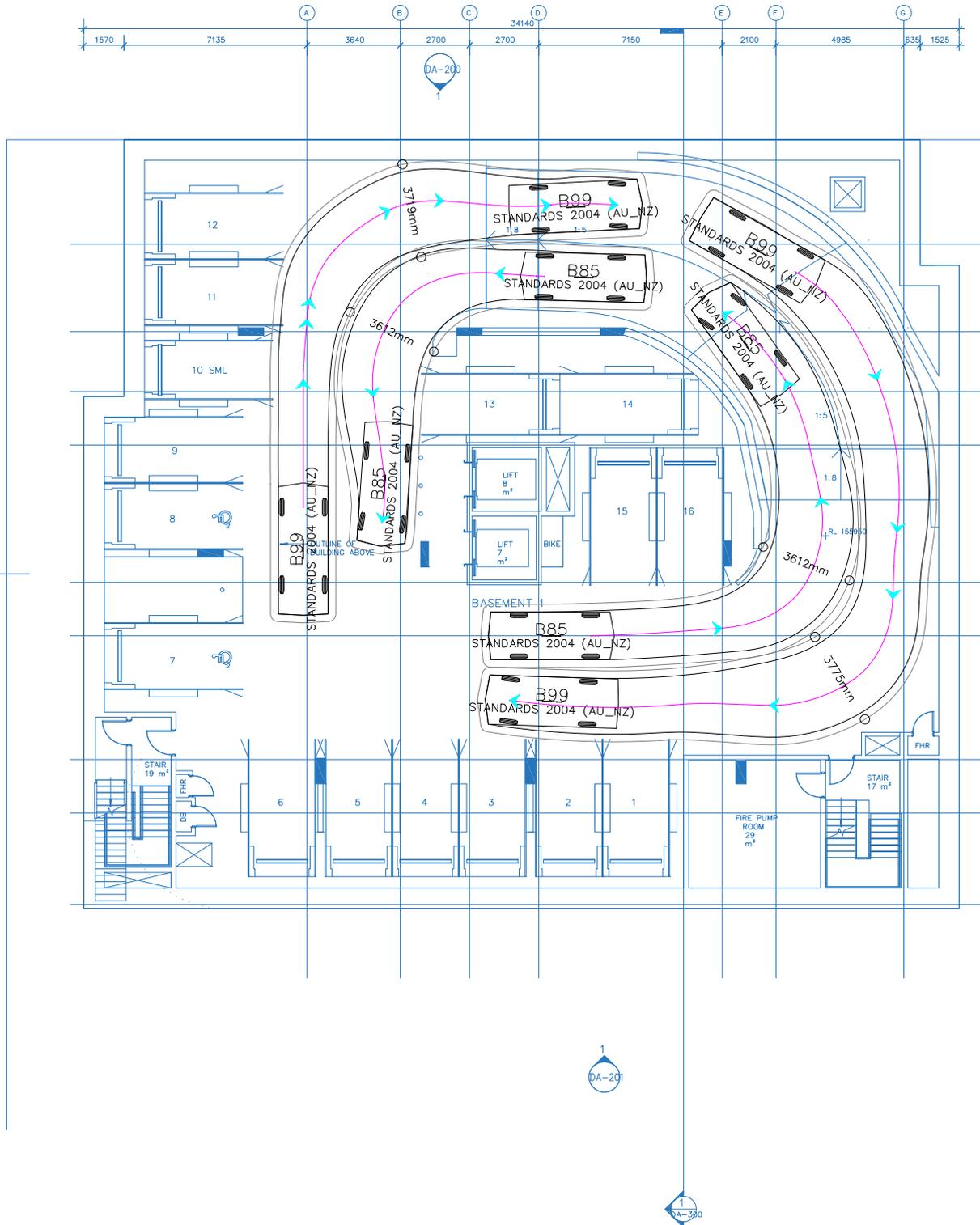


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF B99 VEHICLES ENTERING & EXITING THE SITE



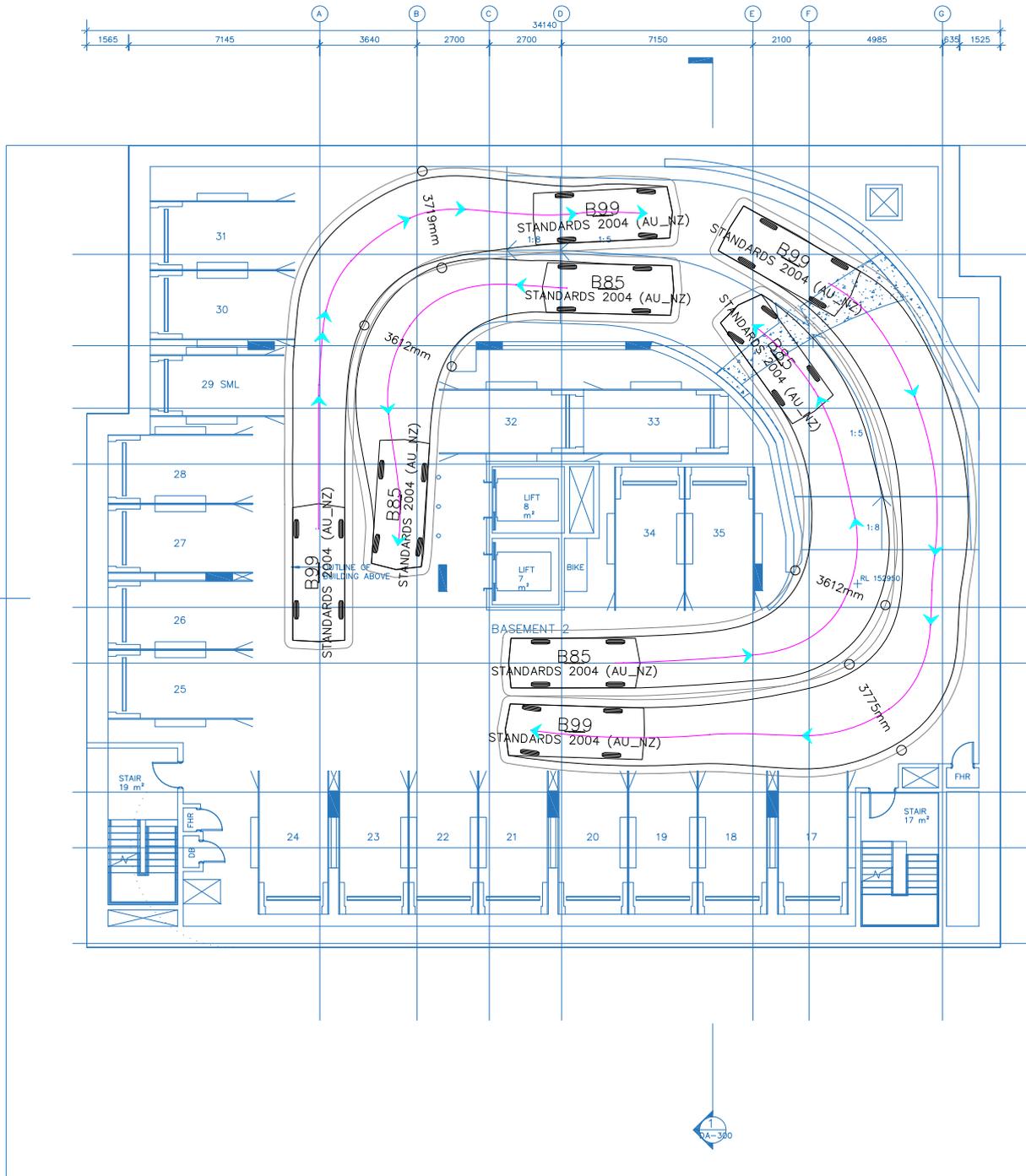
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF B99 VEHICLES ENTERING & B85 VEHICLES EXITING GROUND AND BASEMENT LEVEL 1

SP 2



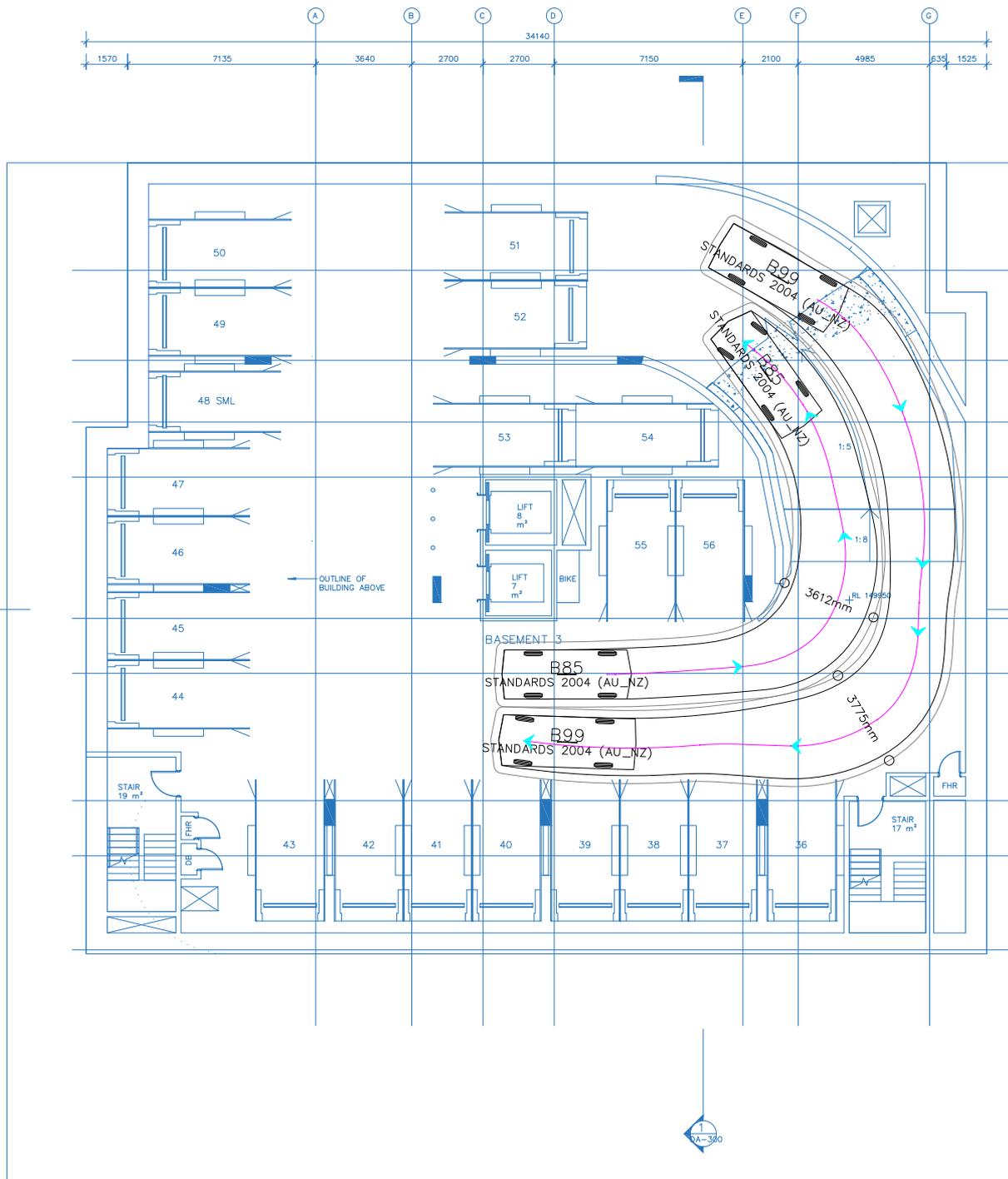
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF B99 VEHICLES ENTERING & B85 VEHICLES EXITING BASEMENT LEVELS 1 AND 2

SP 3



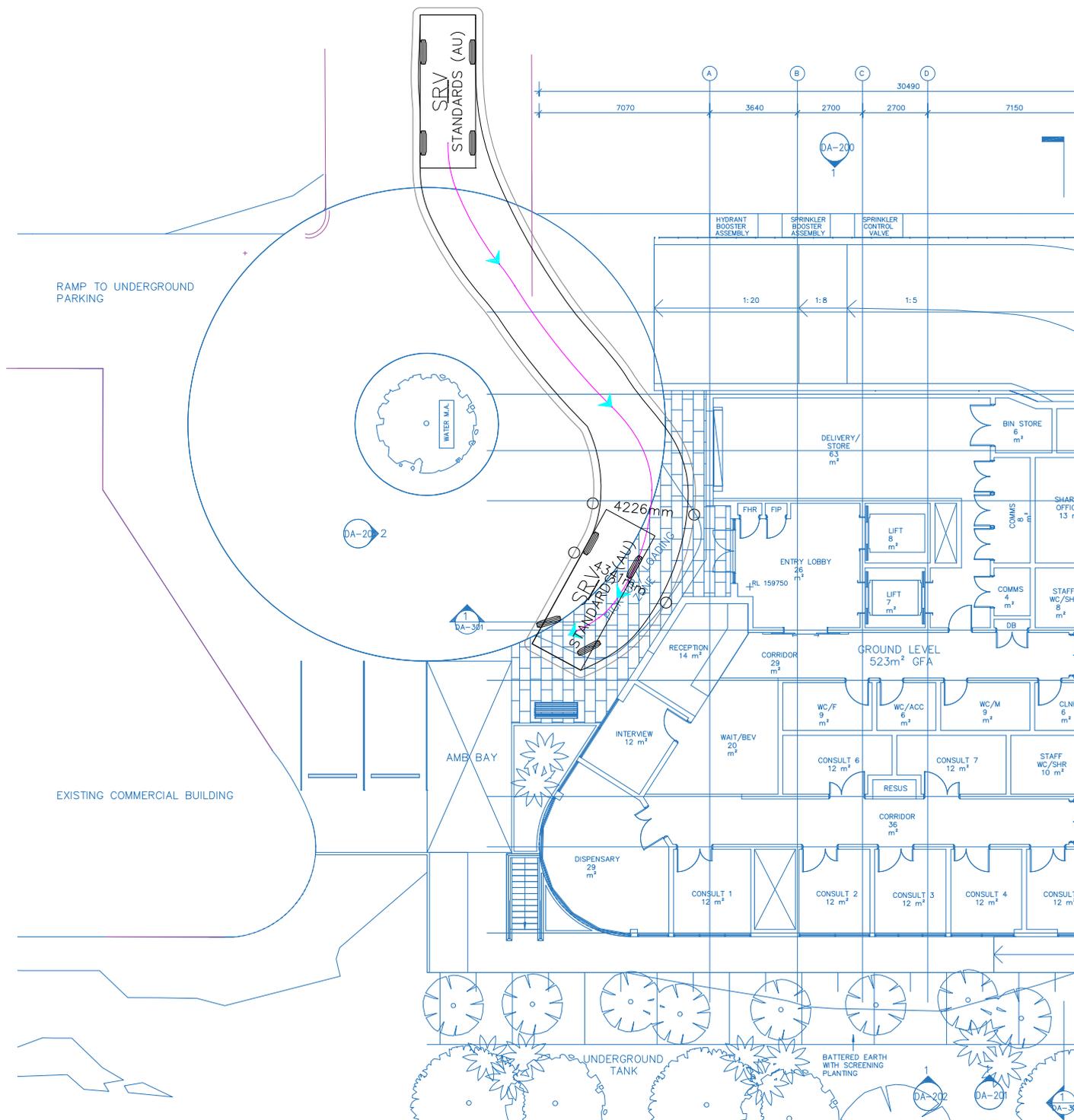
LEGEND

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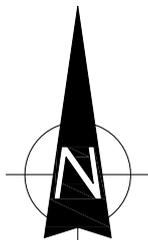
**SWEPT PATH ANALYSIS
OF B99 VEHICLES ENTERING
& B85 VEHICLES EXITING
BASEMENT LEVEL 3**

SP 4



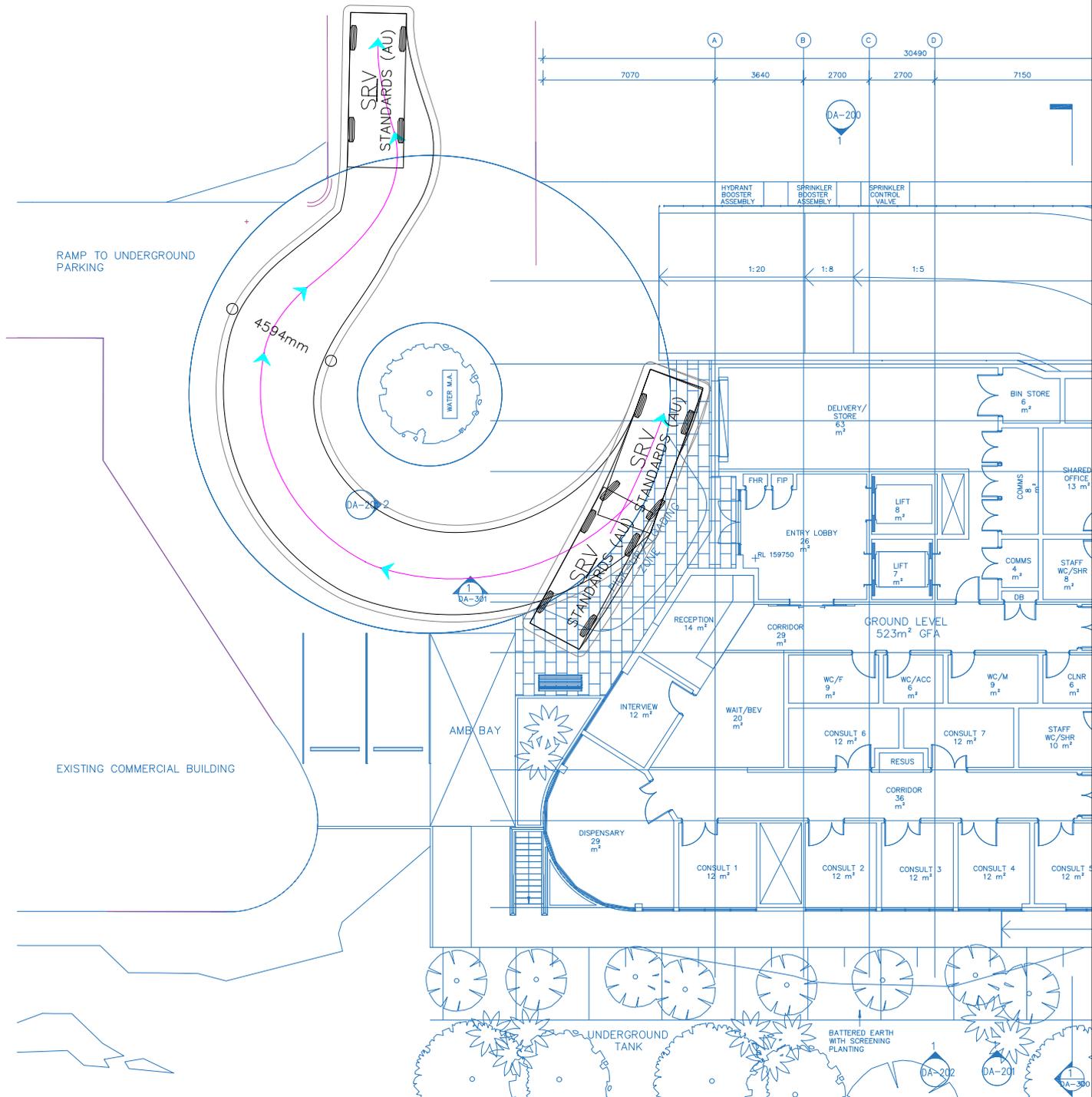
LEGEND

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**SWEPT PATH ANALYSIS
OF A 6.4M SMALL RIGID
VEHICLE STOPPING
TEMPORARILY ON THE
DROP-OFF ZONE AT THE
GROUND LEVEL**

SP 5

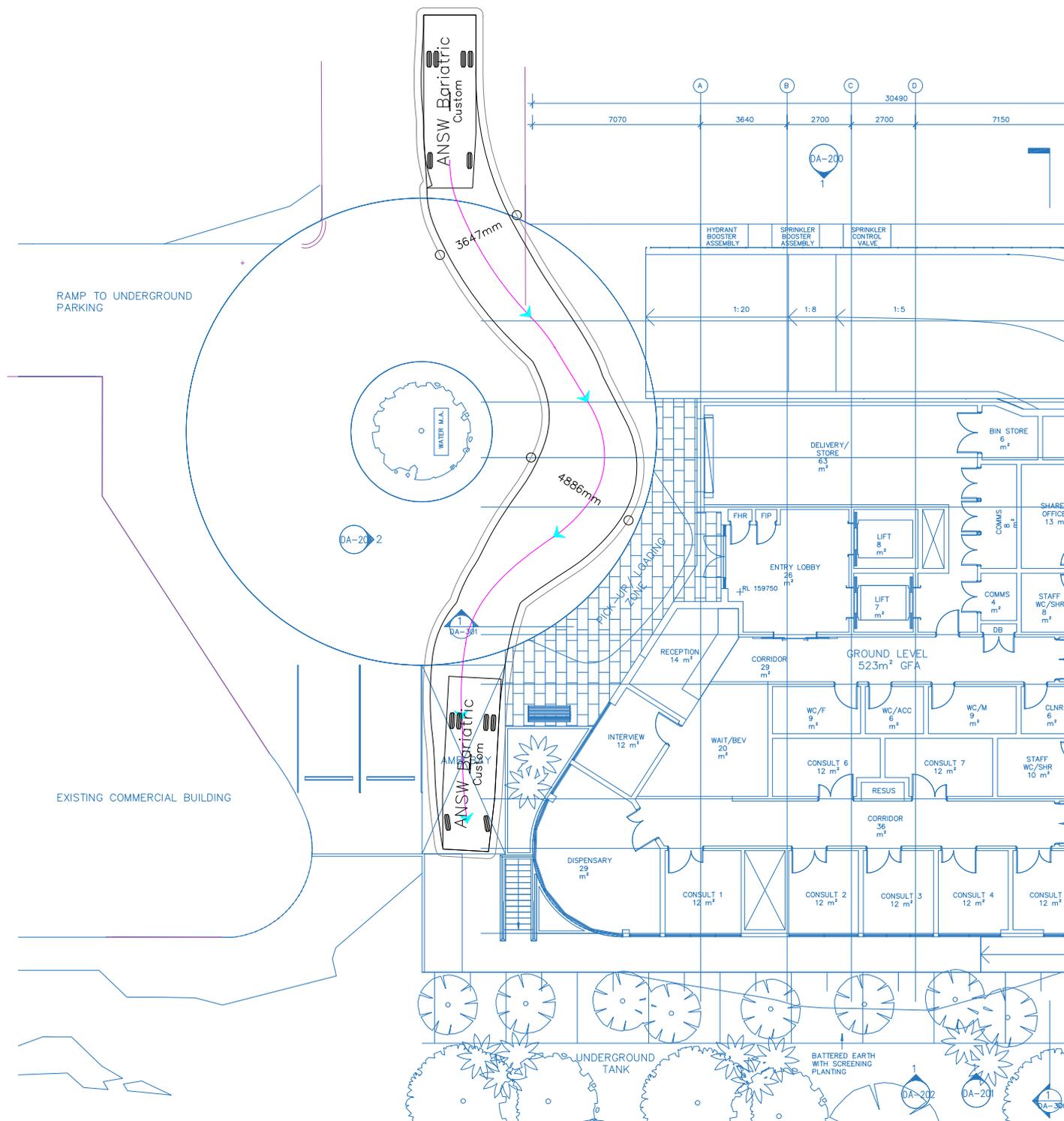


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

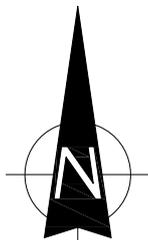


**SWEPT PATH ANALYSIS
OF A 6.4M SMALL RIGID
VEHICLE EXITING THE
DROP-OFF ZONE AT THE
GROUND LEVEL**



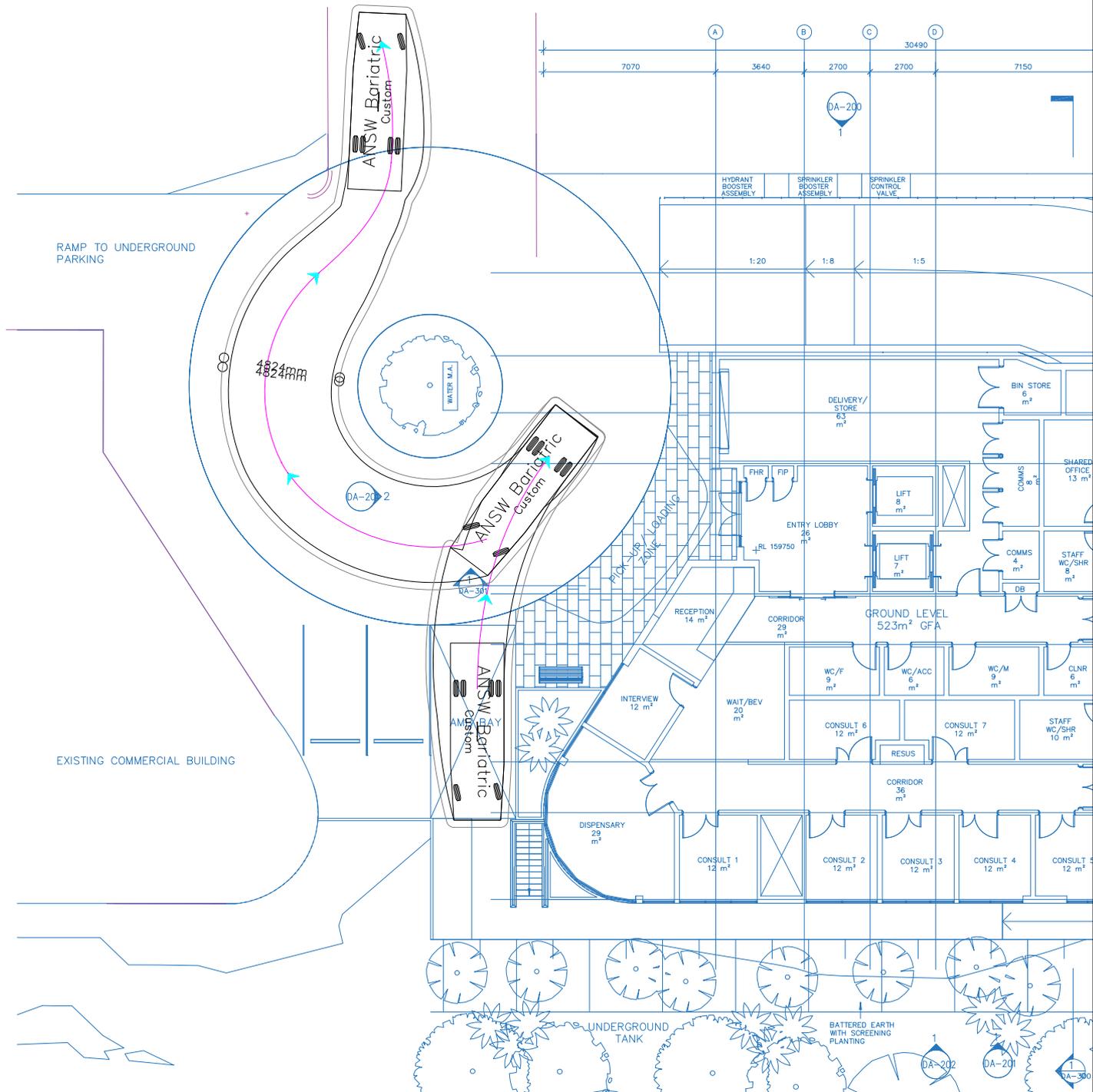
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF A 7.3M BARIATRIC AMBULANCE ENTERING THE AMBULANCE SPACE AT THE GROUND LEVEL

SP 7



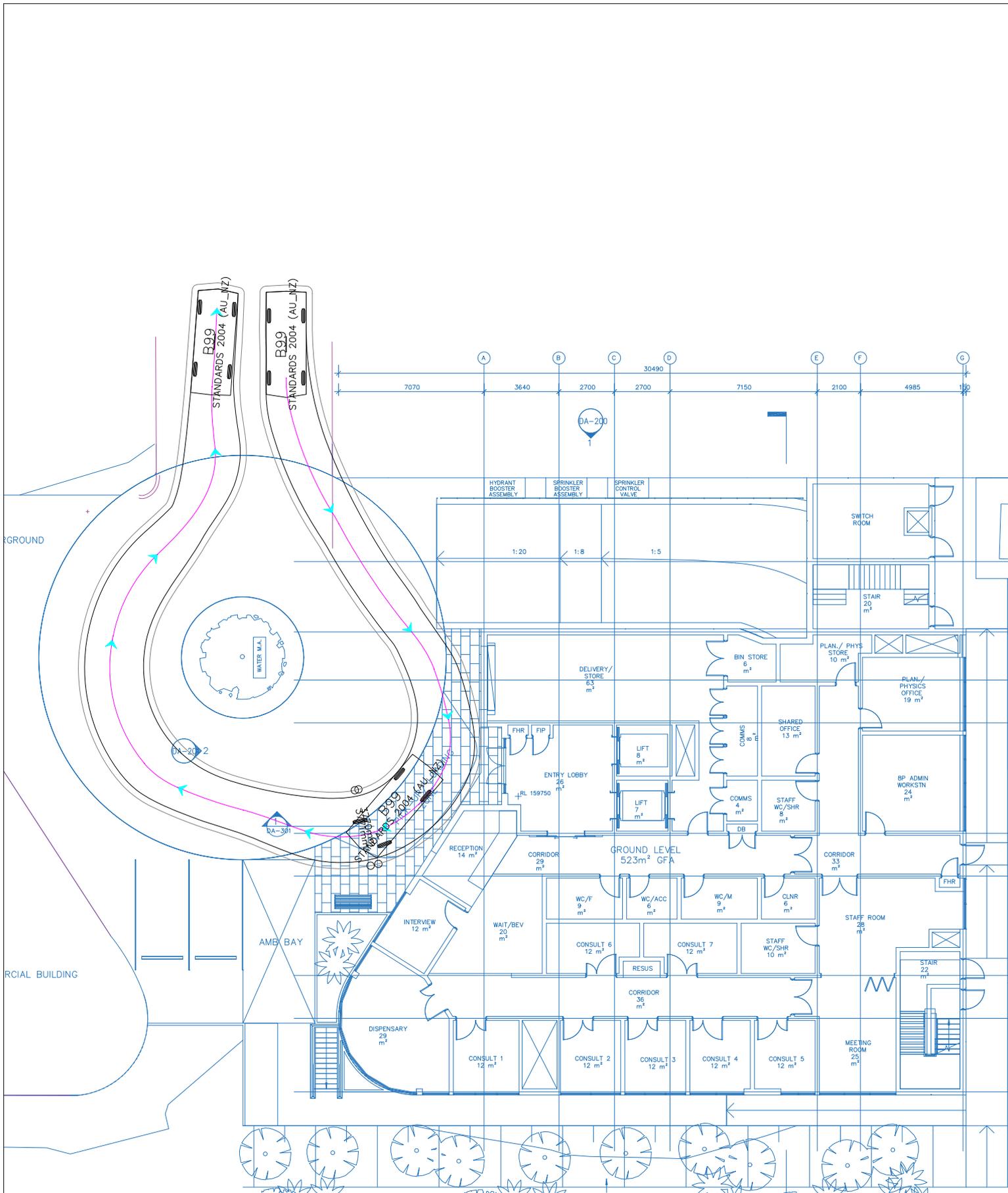
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF A 7.3M BARIATRIC AMBULANCE EXITING THE AMBULANCE SPACE AT THE GROUND LEVEL

SP 8



LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF A B99 VEHICLE ENTERING AND EXITING THE PORTE COCHERE AT THE GROUND LEVEL

Transport and Traffic Planning Associates