



LOKA CONSULTING ENGINEERS

OFFICE : SUITE 2, 55-59 PARRAMATTA ROAD, LIDCOMBE NSW 2141

PHONE: 02 8065 9689

FAX: 02 8065 9690

MOBILE: 0404 142 063

EMAIL: info@lceng.com.au

Web: www.lceng.com.au

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Traffic Management Report for 9 – 13 Goulburn Street, Warwick Farm, NSW

Prepared by

LOKA CONSULTING ENGINEERS

Nermein Loka

BSC, ME, MIE(AUST), CPEng, NPER, RPEQ

Senior Civil Engineer

Accredited Certifier

Director

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1. Introduction

Loka Consulting Engineers Pty Ltd has been engaged by Urban Link to provide Traffic Management Plan for the site at 9 – 13 Goulburn Street, Warwick Farm, NSW (refer to Figure 1-1 and Figure 1-2).

A Traffic Management Plan and Report is required for the proposed development to identify the impacts of the proposal on the local street network and mitigation measures required to ameliorate any impacts. This includes:

- A description of the site and details of the development proposal;
- A review of the road network in the vicinity of the site, and traffic conditions on that road network;
- A review of the geometric design features of the proposed car parking facilities for compliance with the relevant codes and standards; and
- An assessment of the adequacy and suitability of the quantum of off-street car parking provided on site.



Figure 1-1 The Subject Site (from SIX maps)

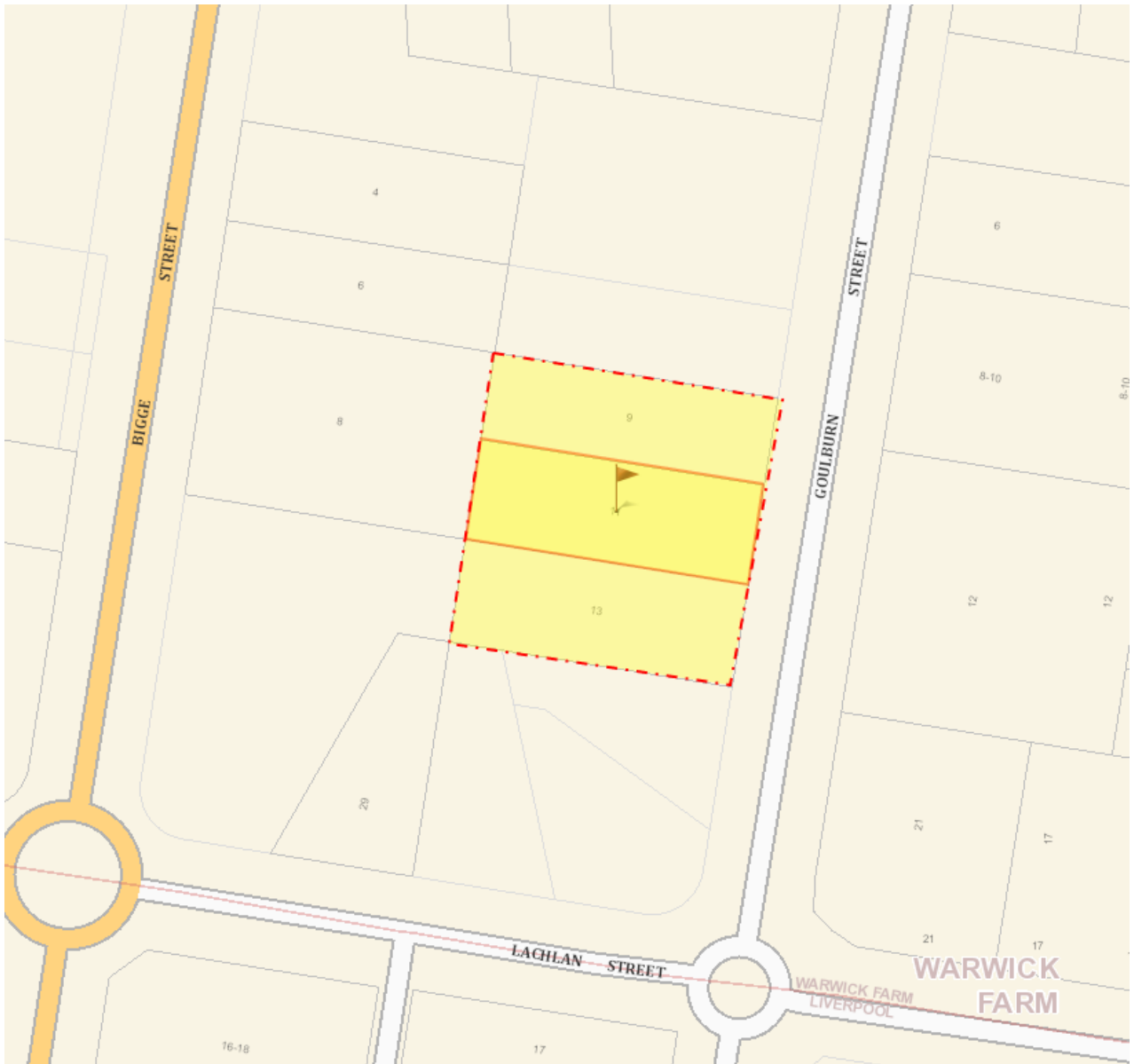


Figure 1-2 Site location (from Six maps)

2. Proposed Development

The proposed development will consist of a residential development with a site area of 2695.35m².

The development consists of 2 basement levels, with a primary function of a car park, while the whole proposed facility will be ground and 8 levels of residential flat units, totalling 101 units.

The site is generally rectangular in configuration, it has an Eastern frontage of 52.488 metres to Goulburn Street, western boundary of 52.488 metres, a Northern site boundary of 51.46metres and a southern boundary of 51.46 metres to neighbouring retail properties.

The proposed residential building is bounded by Goulburn Street on the East, No. 8-10 Bigge Street and No. 31 Lachlan Street on the West, No. 7 Goulburn Street on the North, and No. 27 Lachlan Street on the South.

3. Off Street Car Parking Provision

3.1. Car parking

The proposed residential building is only 800m away from Warwick Farm Railway station (refer to Figure 3-1), which is a 10-minute walk according to Google maps.

Table 3-1 shows the Warwick Farm train station lines and the time between two successive trips to the city.

Table 3-1 Warwick Farm Train Lines and Time schedule.

	Lines	Name and Description	Time
	T2	Inner West & South Line	13 Min
	T5	Cumberland Line (Campbell Town – Schofields)	30 min
	T3	Bankstown Line	30 min

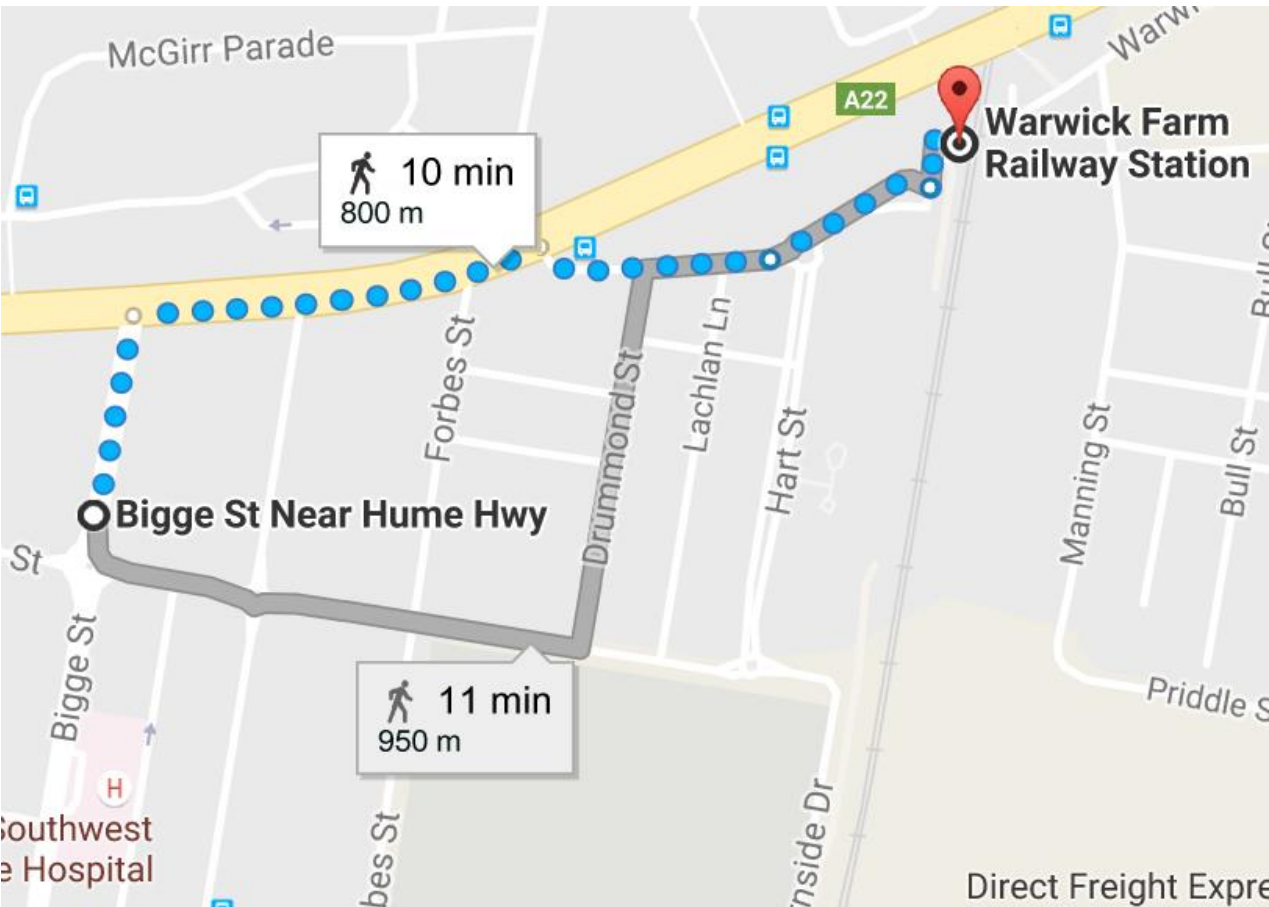


Figure 3-1 Site location to public transportation (from Google maps)

According to the Apartment Design Guide, objective 3J-1 car parking is provided based on the proximity to public transport on sites that are within 800 metres of a railway station or light rail

stop in the Sydney Metropolitan Area. The minimum car parking requirements for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirements prescribed by the relevant council, whichever is less.

According to the latest architectural plan, the development consists of 14 one-bedroom units; 75 two-bedroom units; and 12 three-bedroom units. Table 3-2 shows the minimum space required according to Off-street parking space rates according to Guide to Traffic Generating Developments.

Table 3-2 Off-street parking space rates according to Guide to Traffic Generating Developments.

Use	Flat/ unit type	Minimum spaces required
Residential flat building	1 bedroom	0.6 space / one bed
	2 bedroom	0.9 space / two bed
	3 bedroom	1.4 space / three bed
	Visitor/dwelling	1 space per 5 dwelling

The car parking spaces required for the proposed development is shown in Table 3.3.

Table 3-3 Minimum number of off-street parking spaces

Type	No. of unit	Rate	Parking required	Total	
Residential flat	1 BED	14	0.6	8.4	93
	2 BED	75	0.9	67.5	
	3 BED	12	1.4	16.8	
Visitor parking	Units	101	0.2	20.2	21
MINIMUM PARKING					114

There will be a sum of 114 car parking spaces in total, 93 Residents parking including 11 Disabled parking space; 21 Visitor parking spaces and a carwash bay. The design satisfies the parking requirement in accordance with RTA Traffic Generating Developments.

The architectural plans of the basement floors of the proposed development have been prepared by Urban Link and are attached in Appendix A.

3.2.Bicycle Parking

According to the RTA planning guidelines for walking and cycling December 2004, the bicycle parking rates applied are provided in the table below:

Table 3-3 Bicycle Parking Spaces Rates

Land-use	Type	Units	Rate	Space
Residential Units/Flats	units/flats	101	20%-30% per Unit	21 - 31
	Visitor	101	5%-10% per Unit	5 - 11
MINIMUM PARKING				26 – 42

There will be a sum of 33 bicycle parking/storages in total. There are 7 visitor bicycle parking/storages are provided at Ground floor, while the 26 residential bicycle parking/storages are provided at Basement 1 &2, which complies with RTA Guide.

4. Car Park and Driveway Layout

4.1. Driveway and Ramp Design

The design of the driveway, internal roadways & ramps, car parking spaces comply with Australian Standards, details are shown in the ground floor architectural plan. Indication gradients and dimension are provided for long sections as shown in both ground floor architectural plan and basement floor architectural plan. The Table 4-1 shows the architectural Plan complied with the Australian Standard.

Table 4-1 Driveway Design Standard

FEATURE	Australian Standard 2890.1:2004	Liverpool DCP	Architectural Plan	Compliance
Driveway Width	3.0 to 5.5 for Category 1 6.0 to 9.0 for Category 2	Number of car parking spaces from 101 – 300 the width should be from 6m – 9m	8.5m	Yes
Ramp Grades	<u>Residential Ramp Grade</u> 1:20 (5%) for 1st 6m up to footpath OR 1:8 (12.5%) down to footpath. >20m 1:5 (20%) maximum <20m 1:4 (25%) max. Transition required if grade change in excess of 1:8 (12.5%)	- Transition zone 1:12 - Maximum gradient 1:6 driveways longer than 20m - Maximum gradient 1:5 driveways less than 20m - Transition zone 1:12	<u>1ST Ramp type from ground floor to basement 1</u> 1:20 in the 1st 5m down to Transition ramp - The grade changes 6.25% for 7m 14.32m long ramp with gradient maximum 1:6.5 - Transition ramp of 7m with gradient 1:16 <u>2nd Ramp type between basement 1 & basement 2</u> - Transition ramp of 4m with gradient 1:8 10.0m long ramp with gradient 1:5	Yes

			Transition ramp of 4m with gradient 1:8	
Ramp Widths	5.8 Includes two manoeuvring clearances (2 x 300 mm)	Over 40 spaces 6-6.5m	Straight ramp: 2 way = 5.5m in addition to 2 kerbs (2 x 300 mm)	Yes

The ramp & driveway design is complying with Australian Standard AS2890.1 (2004).

Ground Floor architectural plan of the proposed development has been prepared by Urban Link and it is attached in the Appendix B.

4.2. Dimensions of Parking Spaces

FEATURE	Australian Standard 2890.1:2004/2890.6:2009	Liverpool Council's DCP	Architectural Plan	Compliance
Parking Space for bays at 90°	5.4m x 2.4m	5.4m x 2.4m	5.4m x 2.4m	Yes
Parallel Parking Space	5.4m X 2.4m when space is unobstructed end 6.2 X 2.4m when space is obstructed end		6.2m X 5.4m	Yes
Aisle Width	5.8m minimum	5.8m	5.8m & 6.108	Yes
Shared Zone for disabled parking	5.4m x 2.4m		5.4m x 2.4m For parking no. 36 & 96	Yes
Head Clearance	2.2m normal parking 2.5m disable parking 4.5m medium rigid vehicle	2.2m normal parking 2.5m disable parking	*Basement 1 Headroom clearance is 4.0m **Headroom clearance is 2.6m	Yes
Bicycle parking space	1800mm X 500mm		1800mm X 500mm	Yes
Vertical bicycle parking	1200mm X 500mm		1200mm X 500mm	Yes
Bicycle parking Aisle	1500mm		1500mm	Yes

***Basement 1 headroom clearance is accepted to be 4m only as the maximum council vehicle able to enter the garage is 3.4m height only**

****For Basement 2 entry the maximum headroom clearance through the ramp is 2.3m only**

As required in AS 2890.1:2004, a triangular area with 2.5m (face to driveway) by 2.0m (face to street) will be kept clear of obstructions to visibility (referring to Figure 7-1).

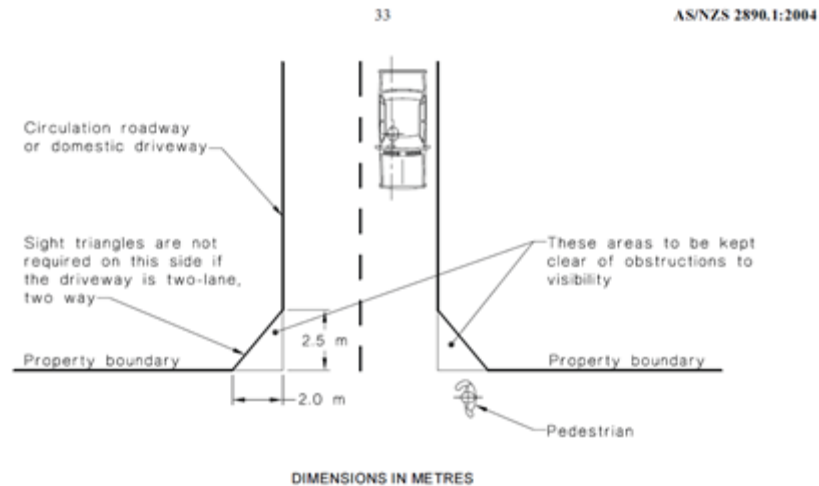


Figure 4-1 AS 2890.1:2004 Requirement

In accordant to AS 2890.1:2004 requirements, sight triangle is hatched in red and shown in the following (referring to Figure 7-2) as well as in the ground floor architectural plan.

The proposed driveway is at least 1 meter away from any structure including power poles, street lightings, signs, road furniture's etc. and 3 meter away any from street trees.

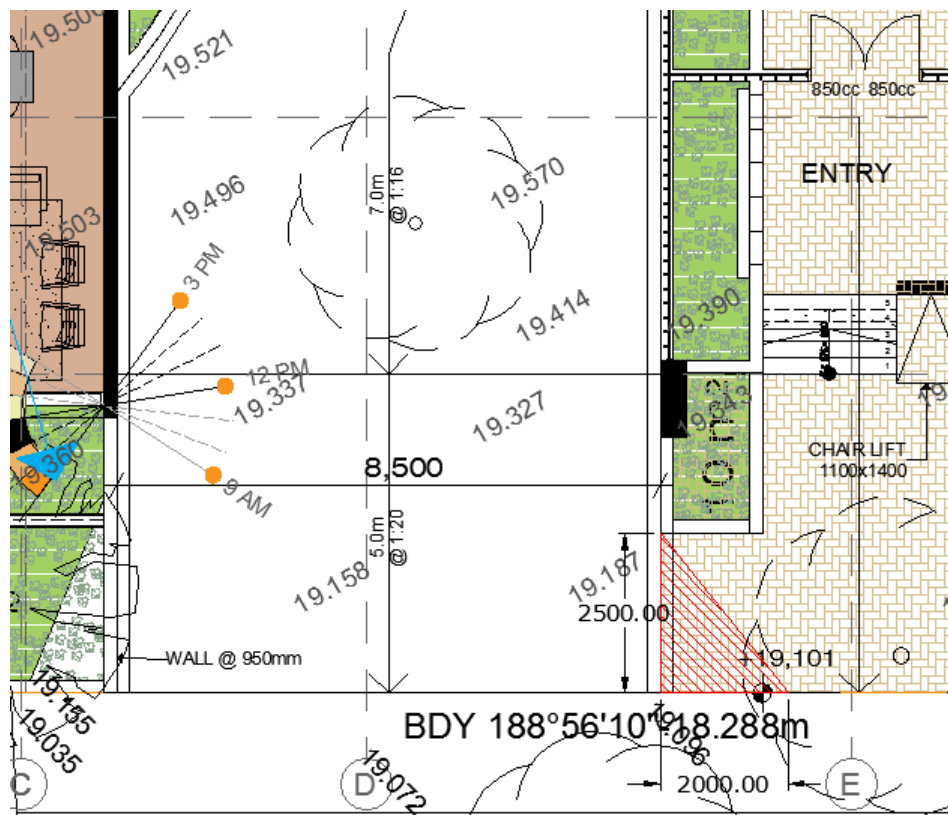


Figure 4-2 Sight Triangle

It is our opinion that car spaces provide in the architectural plan complies with Australian Standards.

5. Traffic Generation

An indication of the traffic generation potential of the development proposal is provided in accordance with Roads and Maritime Services (RMS) publication 'Guide to Traffic Generating Developments 2002'.

RMS guidelines are based on an extensive survey of a wide range of land uses. The subject site is identified as a high density residential flat building.

Rates.

Metropolitan Regional (CBD) Centres.

Daily vehicle trips = not available

Peak Hour Vehicle Trips = 0.24 trips per unit.

For the subject site, there are 101 units in total, which are all small units. Therefore, there is a traffic generation potential of approximately 25 vehicles per hour during peak periods. This value should be discounted by the expected existing volume of traffic, to determine the net increase (or decrease) in future expected traffic.

The existing site contains two single houses. Based on RMS guidelines, the existing site is identified as 2 dwellings. Hence, the following is expected:

- Daily vehicle trips = 9.0 per dwelling; and
- Weekday peak hour vehicle trips = 0.85 per dwelling.

For the existing site which contains 2 dwellings, there is a traffic generation potential of approximately 2 vehicles per hour during peak periods. This is shown in Table 5-1 below.

Table 5-1 Project Net Increase in Peak Hour Traffic Generation Potential.

Traffic Generation Potential	Vehicle Trips
Future	25
Existing	2.0
Net	23.0

According to the Table above, it is likely that the proposed development will result in an increase in the traffic generated, by approximately 23 vehicle trips during peak hour.

It is our opinion that this increase in traffic activity is manageable and will not have any unacceptable traffic implications in terms of road network capacity.

6. Other Facility

Convex mirrors are required at the top and bottom of each ramp and corners to ensure there is sufficient a sight distance for drivers.

A notice at basement 1 at truck turning area for all residents and visitors to keep this area clear and take a cautions

7. Swept Path Analysis

To ensure all vehicles enter and exit the site in a forward direction, swept path analysis have been conducted (See Appendix C).

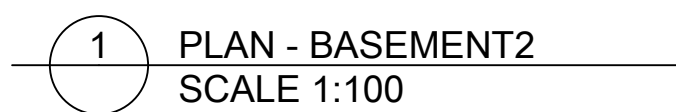
It is our opinion that the proposed driveway and basement complies with Australia Standard.

Basements Floor Plans

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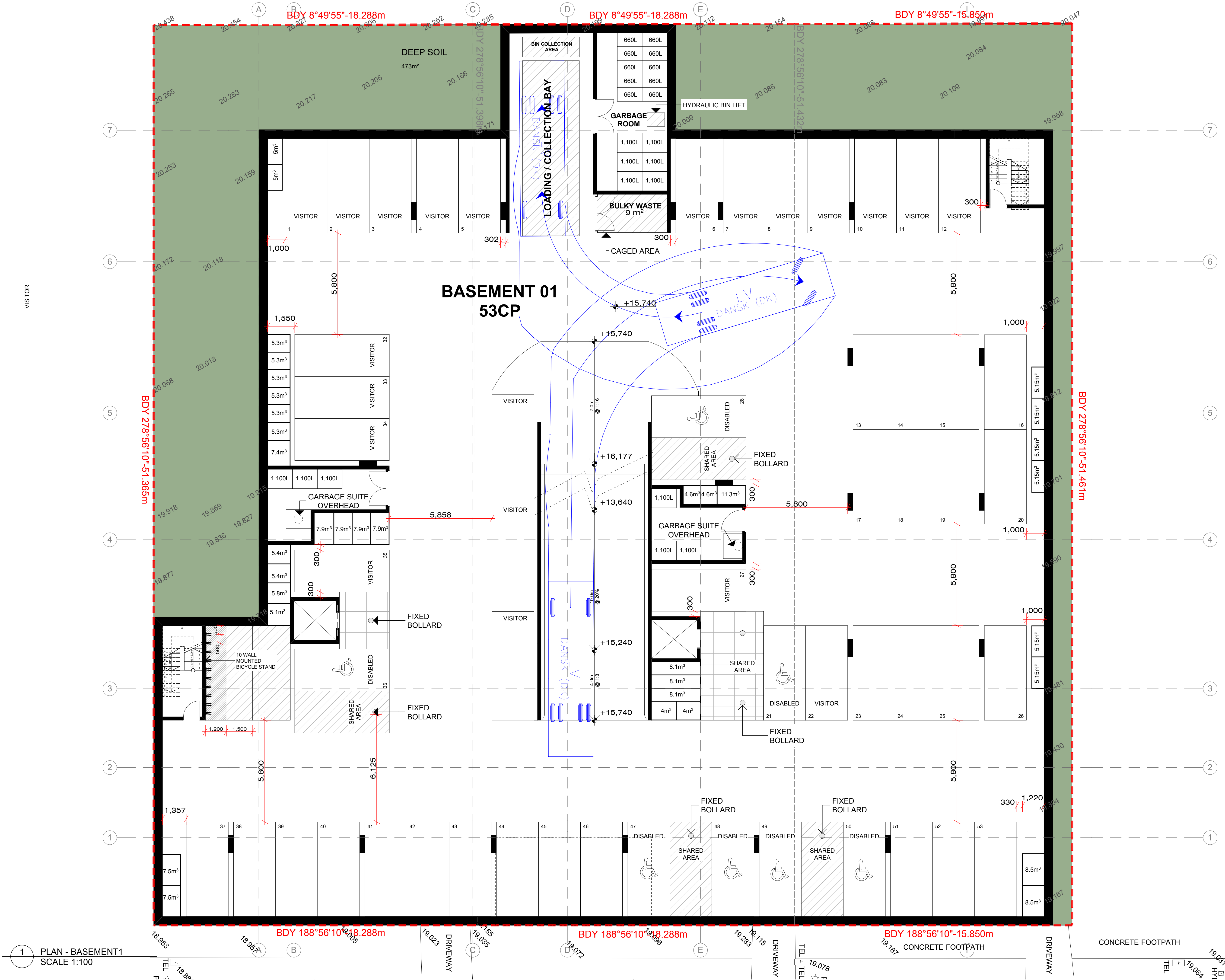
Verify all dimensions on site.



6-042 9-13 Goulburn Street, Warwick Farm - 16.1

Appendix A Basements Floor Plans

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A PRE DA 18/08/2018
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Project
9-13 GOULBURN STREET
WARWICK FARM

URBAN LINK

LVL 10, 11-15 DEANE ST, BURWOOD NSW 2136
P.O BOX 288 ENFIELD NSW 2136
P 02 97450 2014 F 02-9745 0984
E info@urbanklink.com.au
Nominated Architect
Ziad Boumelhem Reg: 8008 Ashraf Anwar Reg: 8007
Joseph El Khawaja Reg: 8933

Drawing Title
FLOOR PLAN
BASEMENT 01

Date Generated 12/10/2016 Drawn CH Checked TJ

Scale
1:100
@ A1 sheet size 50 mm on original

Project number 16042 Drawing number DA2101 A
Status
DA COORDINATION

Swept Path Analythis

The site plan illustrates the layout of the B85 Standards 2004 (AU_NZ) facility. Key features include:

- Top Section:** A 'LOADING / COLLECTION BAY' and a 'GARBAGE ROOM' with a 'HYDRAULIC BIN LIFT'. Below the garbage room is a 'BULKY WASTE' area.
- Central Area:** A large open space with multiple parking spaces, some marked with 'B85 STANDARDS 2004 (AU_NZ)'. It includes a 'GARBAGE SUITE OVERHEAD' and a 'SHARED AREA'.
- Bottom Section:** A row of rooms, including 'VISITOR' rooms, 'DISABLED' rooms, and 'SHARED AREA's. A 'FIXED BOLLARD' is located near the bottom center.
- Right Side:** A row of rooms, including 'VISITOR' rooms, 'DISABLED' rooms, and 'SHARED AREA's. A 'FIXED BOLLARD' is located near the bottom right.
- Dimensions and Room Numbers:** Various dimensions (e.g., 5.3m³, 7.9m³, 8.1m³) and room numbers (e.g., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53) are provided throughout the plan.

A1 0 1 2 3 4 5 6 7 8 9 10

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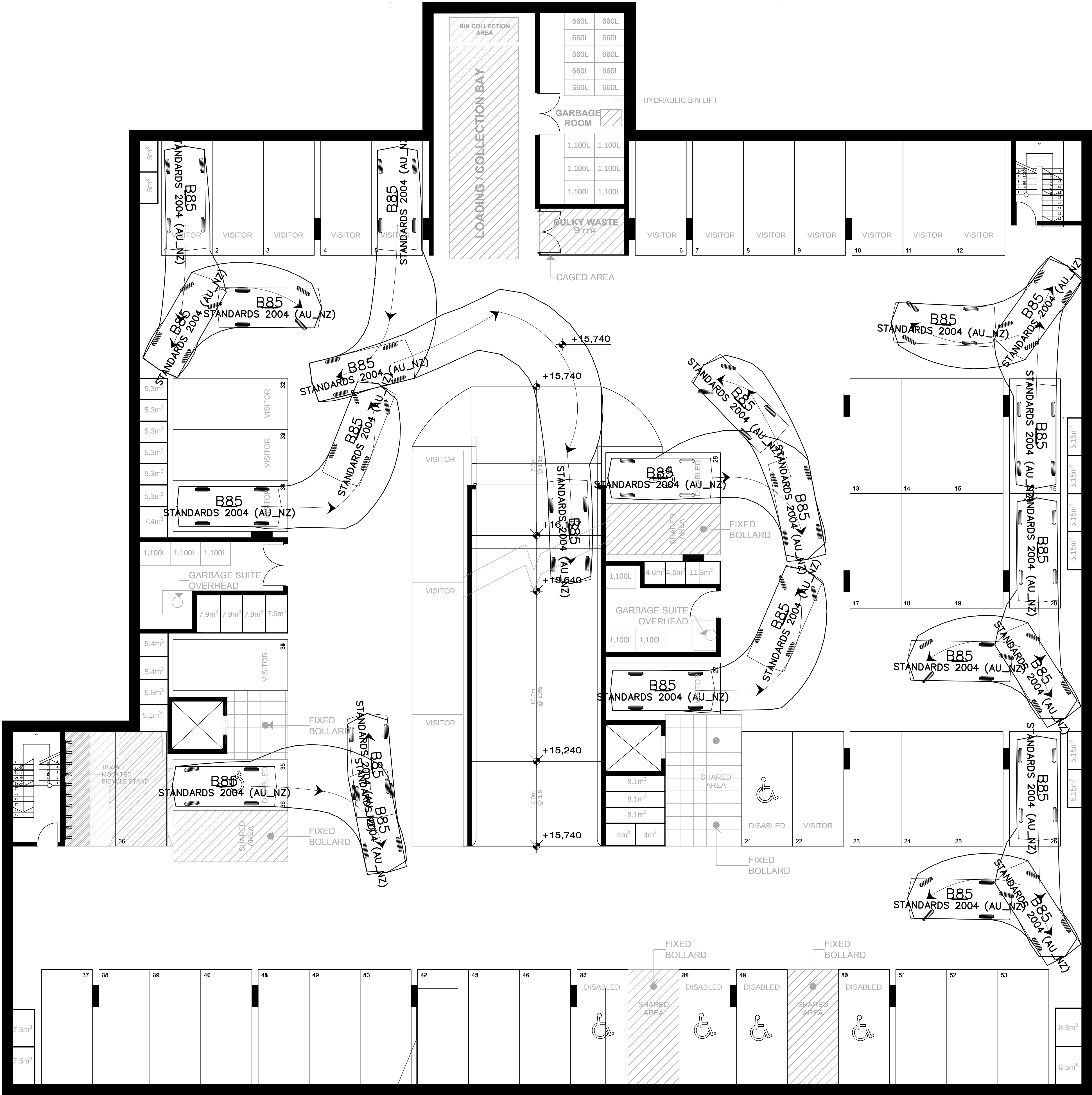
A circle with an inscribed triangle. A line segment connects the center of the circle to one of the vertices of the triangle. The number 2 is written next to the circle.

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Appendix C

Swept Path Analythis

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SWEPT PATH ANALYSIS FOR CAR PARKING AT BASEMENT 1 EXIT 1

SCALE: 1:100

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A	FOR D.A. APPROVAL	N.L.	A.E.	04-10-16
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architecture

Shop 8-11 320 Liverpool Road Enfield NSW 2136
P.O.BOX 288 ENFIELD NSW 2136
Phone (02) 9745 2014 Fax (02) 9745 0984
Email: info@urbanlink.com.au

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SUITE 2 LEVEL 1, 55-59 PARRAMATTA ROAD, LIDCOMBE
LOKA CONSULTING ENGINEERS T: +61 2 8065 9689 F: +61 2 8065 9690
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PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
AT 9 - 13 GOULBURN STREET,
WARWICK FARM, NSW

SHEET SUBJECT

**SWEPT PATH ANALYSIS FOR
CAR PARKING AT BASEMENT
1 EXIT 1**

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SWEPT PATH ANALYSIS FOR CAR PARKING AT BASEMENT 1 ENTRY 2
SCALE: 1:100

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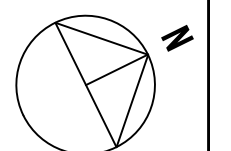
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SUITE 2/LEVEL 1, 55-59 PARRAMATTA ROAD, LIDCOMBE
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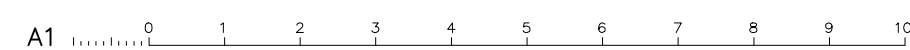
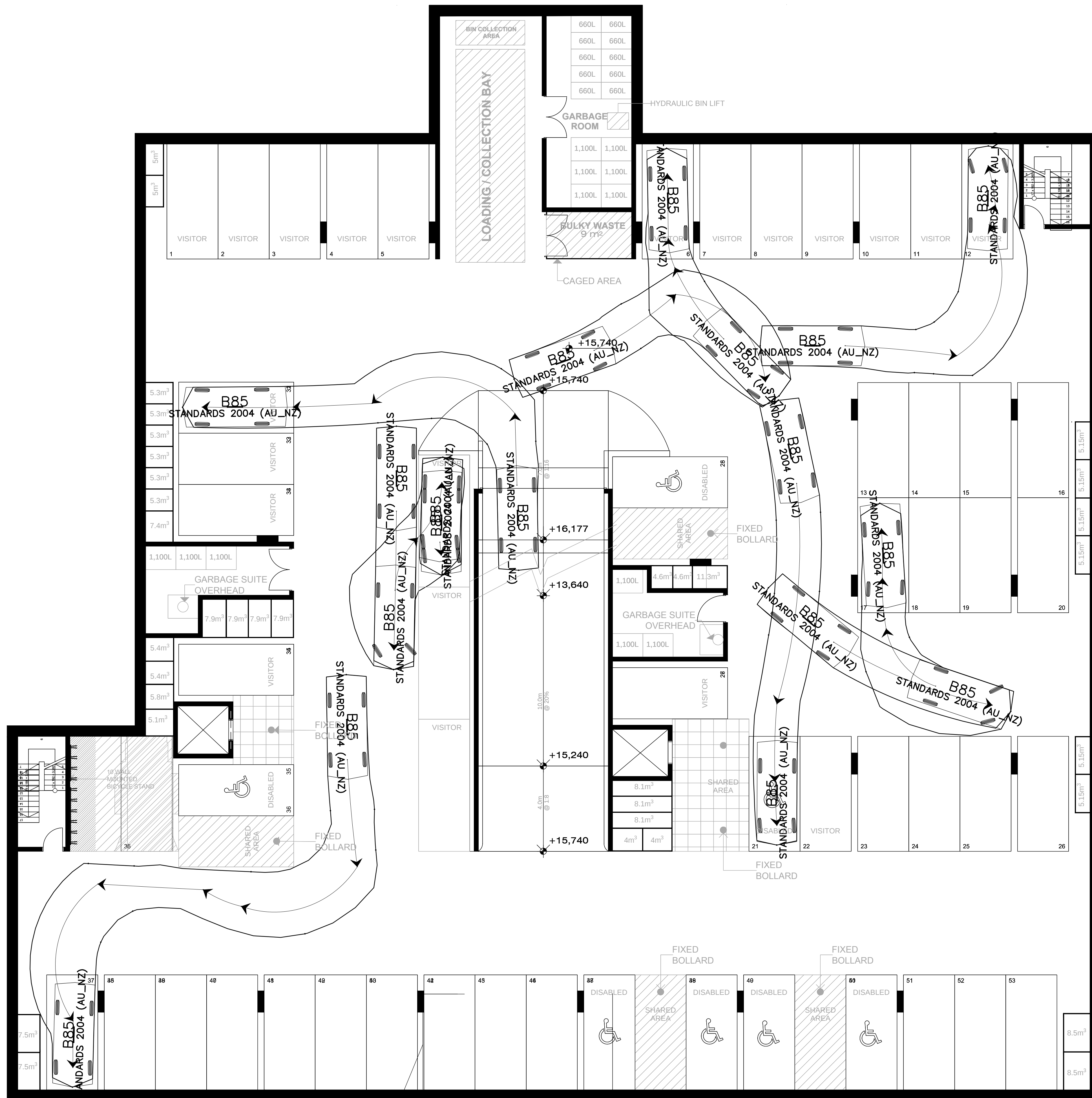
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SWEPT PATH ANALYSIS FOR CAR PARKING AT BASEMENT 1 ENTRY 2

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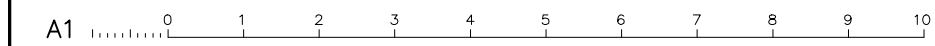
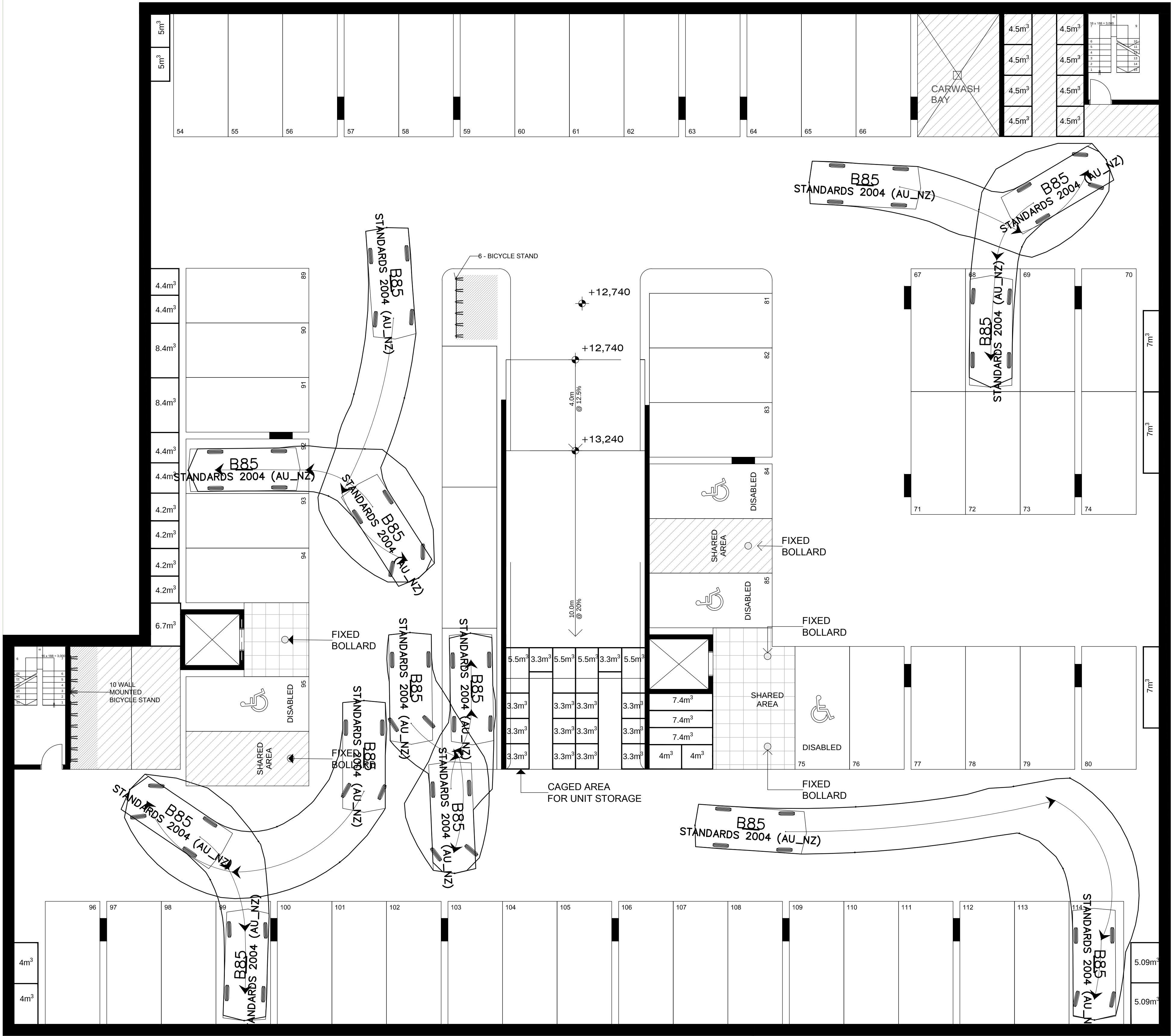
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SWEPT PATH ANALYSIS FOR CAR PARKING AT BASEMENT 2 ENTRY
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SHEET SUBJECT

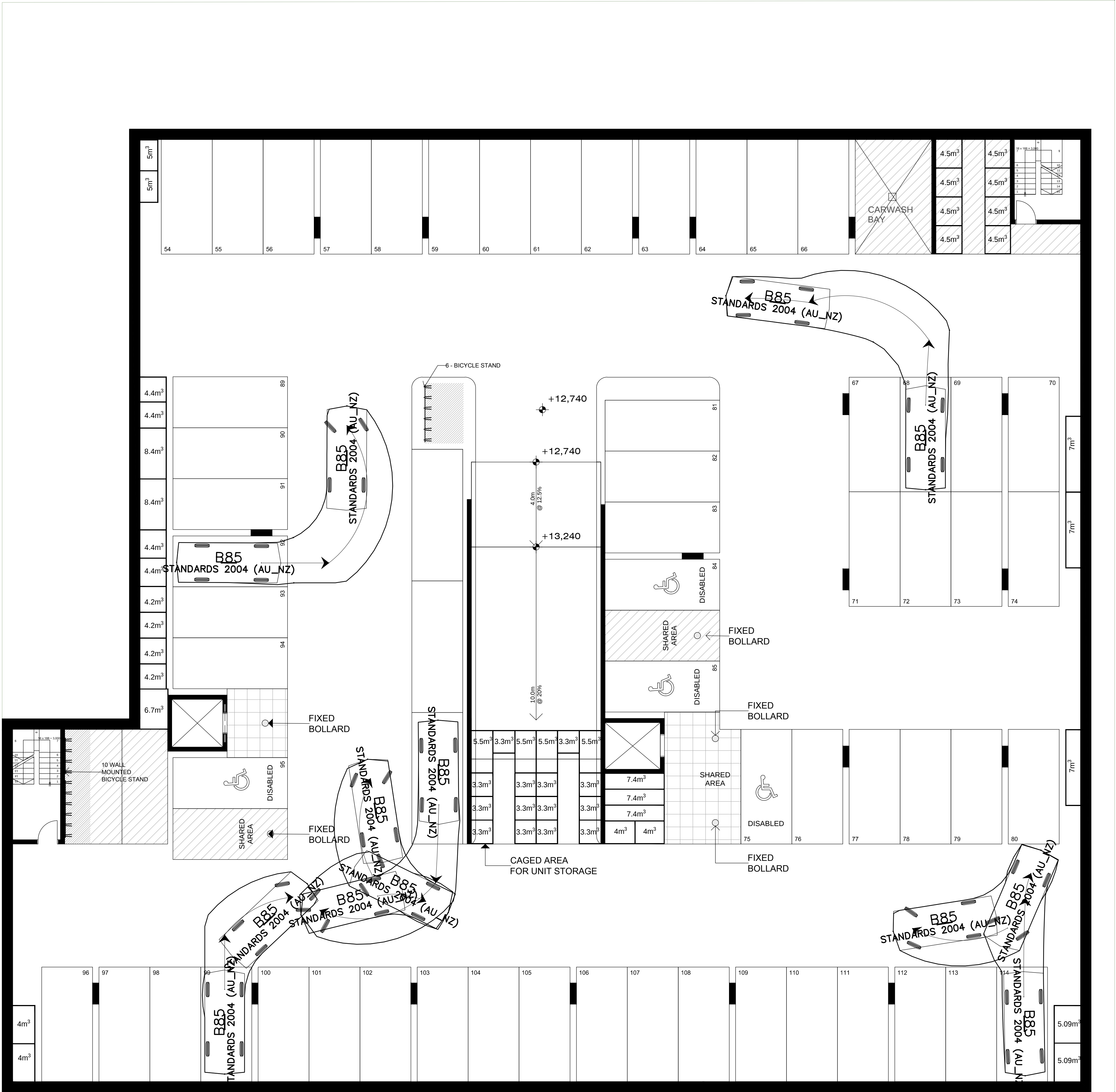
SWEPT PATH ANALYSIS FOR CAR PARKING AT BASEMENT 2 ENTRY

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SWEPT PATH ANALYSIS FOR CAR PARKING AT BASEMENT 2 EXIT
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T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceeng.com.au

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PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
AT 9 - 13 GOULBURN STREET,
WARWICK FARM, NSW

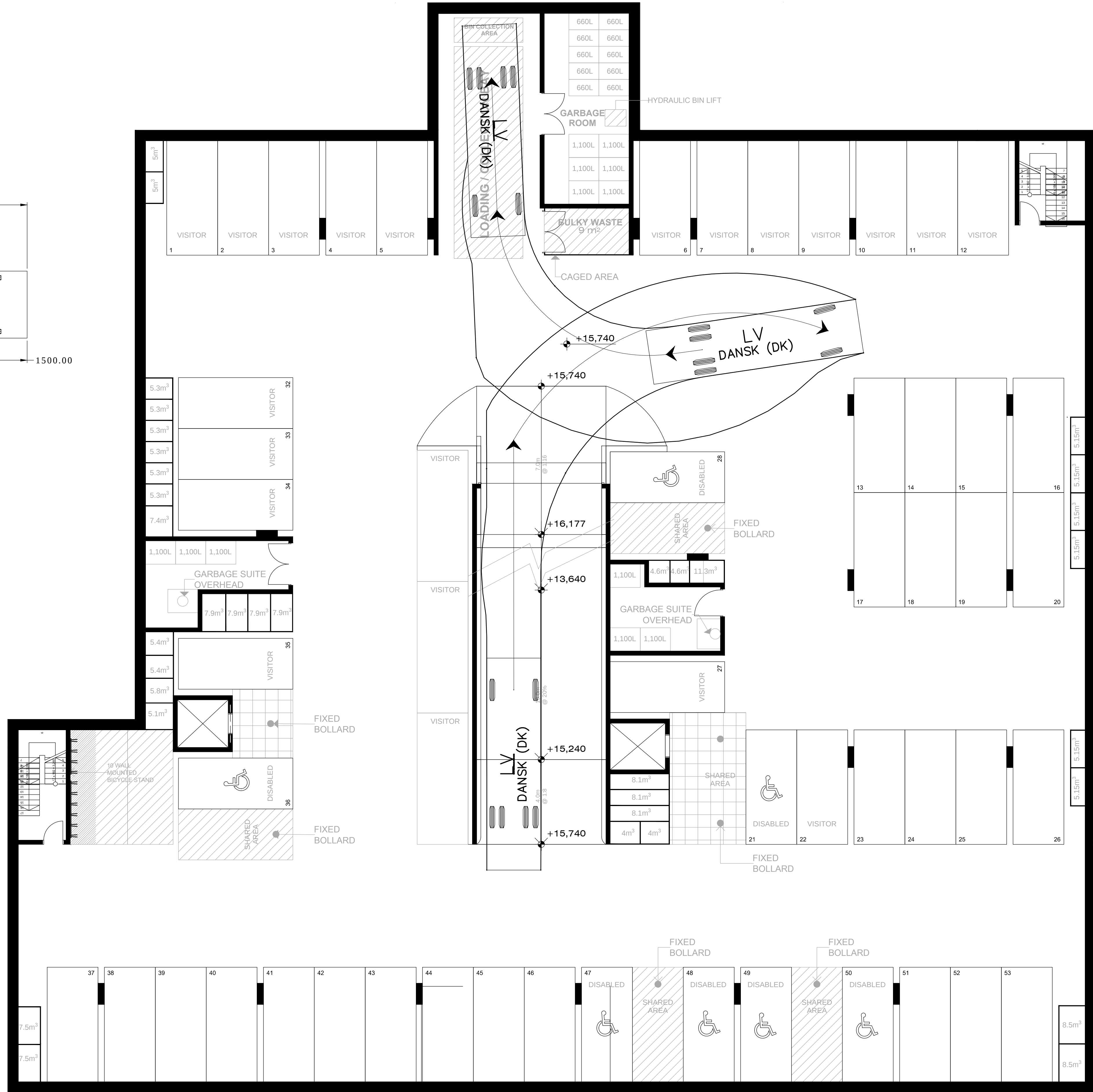
SHEET SUBJECT

**SWEPT PATH ANALYSIS FOR
CAR PARKING AT BASEMENT
2 EXIT**

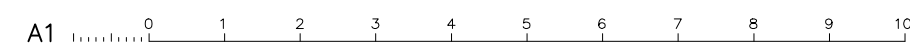
PROJECT	9 - 13 GOULBURN STREET, WARWICK FARM, NSW		
DATE	SEP 16	DRAWN A.E.	DESIGNED N.L. CHECKED N.L.
SCALE @ A1	1 : 100	U.N.O.	JOB No 16NL205
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Swept Path Analythis

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ENGINEERS.

SUITE 2, LEVEL 1, 55-59 PARRAMATTA ROAD, LICOMBE
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@liceng.com.au

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www.liceng.com.au

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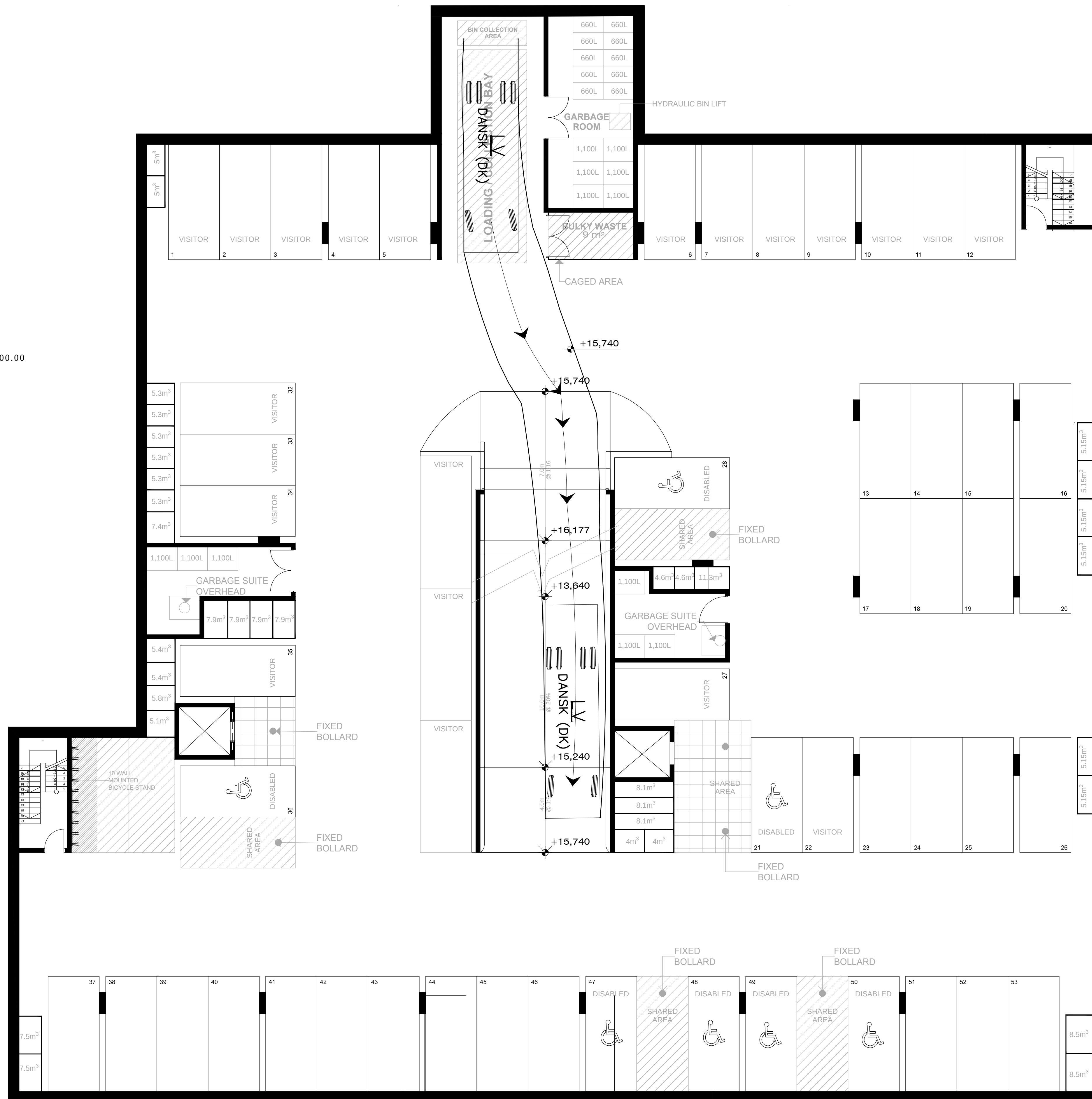
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SWEPT PATH ANALYSIS FOR M.R.V. ENTRY

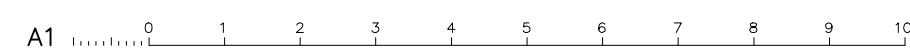
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SWEPT PATH ANALYSIS FOR M.R.V. EXIT

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