STANBURY
TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

PARKING & TRAFFIC IMPACT ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT
92 NORTH STEYNE
MANLY

PREPARED FOR 92 NORTH STEYNE PTY. LTD.
OUR REF: 24-103-REP-1

30 APRIL 2025

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1. INTRODUCTION

1.1 Scope of Assessment

Stanbury Traffic Planning has been commissioned by 92 North Steyne Pty. Ltd. to prepare a Parking & Traffic Impact Assessment to accompany a Development Application to be lodged with Northern Beaches Council. The Development Application seeks consent for the demolition of an existing residential apartment building containing six dwellings within 92 North Styne, Manly, and construction of a new residential apartment building containing three dwellings.

The aim of this assessment is to investigate and report upon the potential traffic and parking consequences of the development application and to recommend appropriate ameliorative measures where required. This report provides the following scope of assessment:

- Section 1 provides a summary of the site location, details, existing and surrounding land-uses;
- Section 2 describes the proposed development;
- Section 3 assess the adequacy of the proposed site access arrangements, parking provision, internal circulation and servicing arrangements with reference to relevant Council, Transport for NSW (TfNSW) and Australian Standard specifications;
- Section 4 assesses the existing traffic, parking and transport conditions surrounding and servicing the subject development site including a description of the surrounding road network, traffic demands, operational performance and available public transport infrastructure;
- Section 5 estimates the projected traffic generating ability of the proposed development and assesses the ability or otherwise of the surrounding road network to be capable of accommodating the altered demand in a safe and efficient manner; and
- Section 6 comprises a preliminary construction traffic management plan detailing the envisaged construction methodology and associated required pedestrian and vehicular traffic management initiatives.

The report has been prepared pursuant to State Environmental Planning Policy (Transport & Infrastructure) 2021.

1.2 Reference Documents

Reference is made to the following documents throughout this report:

- TfNSW's *Guide to Transport Impact Assessment*;
- Northern Beaches Council's *Manly Development Control Plan (MDCP)*;

- Australian Standard for *Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1:2004); and

- Australian Standard for *Parking Facilities Part 3: Bicycle Parking Facilities* (AS2890.3:2015).

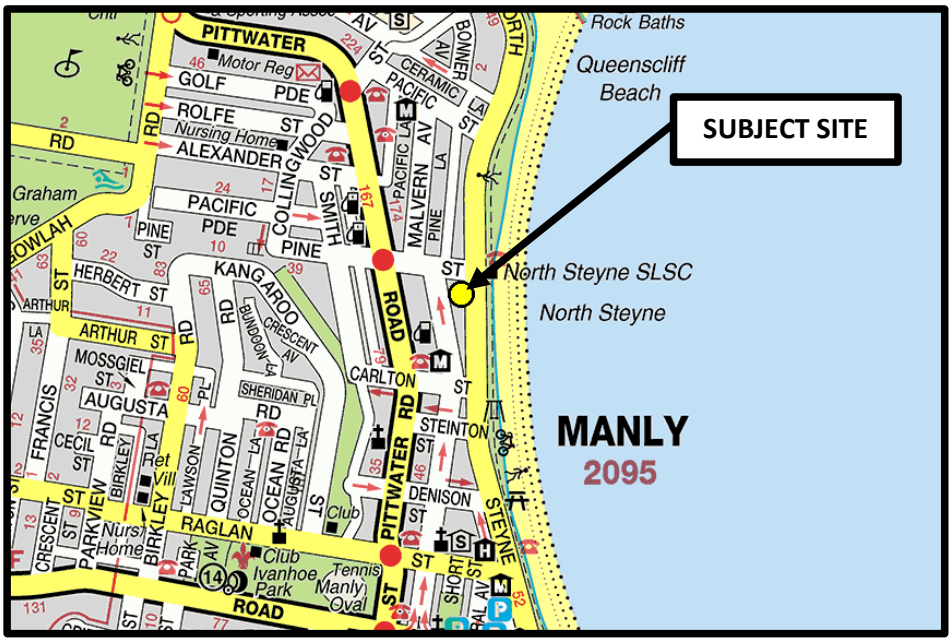
Architectural plans have been prepared by Platform Architects and should be read in conjunction with this report, reduced copies of a selection of which are included as **Appendix 1** for reference.

1.3 Site Details

1.3.1 Site Location

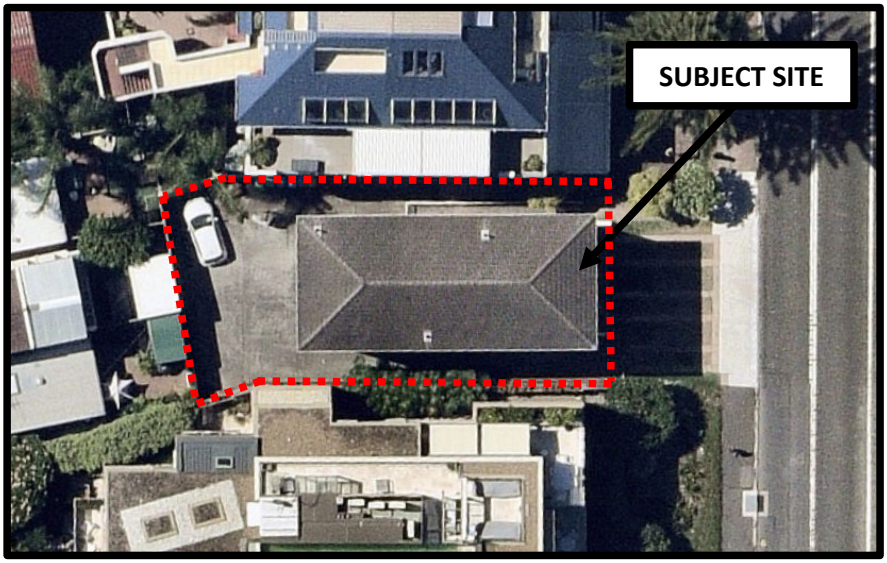
The subject site is situated on the western side of North Steyne approximately 50m to the south of Pine Street, Manly. The site location is illustrated below and overleaf within a local and aerial context by **Figure 1** and **Figure 2**, respectively.

FIGURE 1
SITE LOCATION WITHIN A LOCAL CONTEXT



Source: UBD: Australian City Streets (Version 8)

FIGURE 2
SITE LOCATION WITHIN AN AERIAL CONTEXT



Source: Nearmap (image date: 20/1/2025)

1.3.2 Site Description

The subject site provides a real property address of SP478 and a street address of 92 North Steyne, Manly.

The site provides primarily rectangular shaped parcel of land providing an approximate frontage of 12m to North Steyne. The site extends to the west away from North Steyne up to 25m, resulting in a total area in the order of 315m^2.

1.3.3 Existing Site Use

The subject site currently contains a residential flat building situated within the eastern portion of the site, providing three x 1-bedroom dwellings and three x 2-bedroom dwellings.

Vehicular access is provided via a 10m wide crossover situated along the eastern site boundary, providing vehicular connectivity to North Steyne. This driveway provides connectivity to two adjoining single garages situated immediately adjacent to the eastern boundary and an internal access roadway linking with the remaining on-site car parking areas, running along the southern boundary. The alignment of the abovementioned garages situated adjacent to the eastern boundary is such that vehicular movements between these garages and North Steyne is required to be undertaken by a reverse movement.

1.3.4 Surrounding Uses

The subject site is adjoined by:

- Shop top housing is provided to the north, fronting North Steyne and Pine Street;
- A residential flat building is situated to the south, fronting North Steyne and Whistler Street and being serviced by Whistler Street;
- A series of detached residential dwellings are situated to the west, fronting and serviced by Whistler Street; and
- Queenscliff Beach / Manly Beach are situated to the east of the site.

2. PROPOSED DEVELOPMENT

2.1 Built Form

The subject application seeks Council's approval for the demolition of an existing residential apartment development within 92 North Steyne, Manly, and construction of a new residential apartment development. The development is proposed to comprise the provision of a total of three units, two of which are proposed to contain three bedrooms whilst the remaining unit is to contain four bedrooms.

The development is to be serviced by a ground level parking area and a basement level parking area containing a total of seven resident car spaces, in conjunction with two bicycle parking spaces.

Vehicular access to the on-site car parking area is proposed via a combined ingress / egress driveway connecting with North Steyne in the north-eastern corner of the site. Connectivity between the driveway and the basement car parking level is proposed to be facilitated via a mechanical vehicle lift, accessed directly via, but being set-back approximately 3m from the eastern site boundary.

Pedestrian access is proposed via a pedestrian walkway connecting with the western North Steyne footpath, being situated to the south and separate from the abovementioned vehicular access driveway. The pedestrian access path is proposed to provide access to the building lift / staircase lobbies. A pedestrian lift also provides connectivity between the basement parking level and each of the building levels.

3. SITE ACCESS & INTERNAL CIRCULATION

3.1 Passenger Vehicle Access

3.1.1 Access Design

Vehicular access between the on-site passenger vehicle parking area and North Steyne is proposed to be provided via a new combined ingress / egress driveway situated within the north-eastern corner of the site, providing a width of 3.5m at the property boundary, but widening to provide a 4.9m wide gutter crossing at the western North Steyne kerb alignment.

AS2890.1:2004 provides driveway design specifications based on the proposed primary land use, the functional order of the access road and the number of spaces the driveway is to serve. Tables 3.1 and 3.2 of AS2890.1:2004 specify that, at minimum, a Category 1 type driveway is required, providing a combined ingress / egress driveway width of between 3m and 5.5m based on the local functional order of North Steyne, the residential land-use and the total passenger vehicle parking provision within the on-site parking area of seven spaces. The proposed 3.5m wide combined ingress / egress driveway therefore complies with the minimum AS2890.1:2004 specifications and accordingly, is considered to be satisfactory.

Swept path plans have been prepared in order to demonstrate the ability of passenger vehicles to enter and exit the site in combination, copies of which are included as **Appendix 2**.

The safety and efficiency of access / egress movements are also proposed to be assisted by the following:

- The provision of a relatively level (1:20) grade within the first 6m inside the property boundary;

- The reasonably consistent horizontal and vertical alignment of North Steyne in the immediate vicinity of the subject site facilitates appropriate sight distance between the driveway and approaching public road traffic flow, commensurate with the low travel speeds of vehicles adjacent to the site; and

- No obstructions to visibility adjacent to the egress (northern) side of the driveway facilitating appropriate sight distance between exiting motorists and potential pedestrians travelling along the western North Steyne footpath.

3.1.2 Vehicle to Pedestrian Sight Distance Assessment

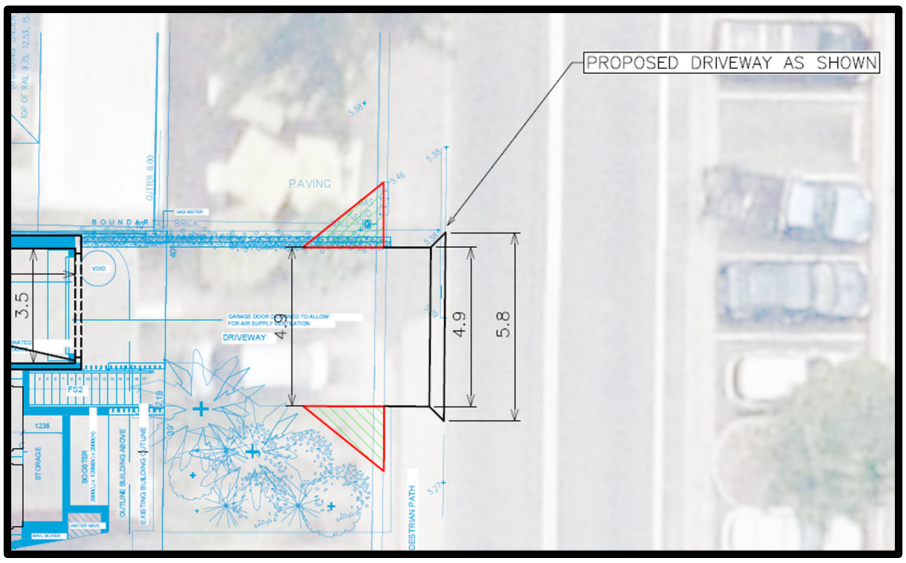
Clause 3.2.4 (b) of AS2890.1:2004 specifies that a triangle measuring 2.5m into the site and 2.0m along the property boundary clear of obstructions to visibility shall adjoin the site of a driveway accommodating exiting traffic. The proposed site access driveway design facilitates the provision of an appropriate sight distance triangle on the southern side of the driveway as specified above. It is however acknowledged that 600mm off-set of the driveway from the northern side boundary is such the abovementioned triangle clear of obstructions to

visibility is not capable of being provided at the boundary adjacent to the northern side of the driveway, strictly in accordance with the Australian Standard clause.

The provided arrangement is however considered acceptable as the existing western North Steyne footpath is off set from the property boundary by approximately 6m, effectively relocating the sight distance triangle to the east of the eastern boundary.

The prevailing off-set of the pedestrian footpath from the property boundary within the western North Steyne footpath effectively facilitates the intention of the Australian Standard requirement. This is demonstrated within **Figure 3** below.

FIGURE 3
EFFECTIVE SIGHT DISTANCE TRIANGLE COMPLIANCE
WHEREBY TRIANGLE IS MEASURED FROM PREVAILING FOOTPATH



The provided arrangement is accordingly considered to facilitate the intent of the specific requirement of the Standard and therefore, is considered to be fit for use.

3.2 Pedestrian Access

Pedestrian access is proposed via a pedestrian walkway connecting with the western North Steyne footpath, being situated immediately to the south and separate from the abovementioned vehicular access driveway. The pedestrian access path is proposed to provide access to the building lift / staircase lobbies. A pedestrian lift also provides connectivity between the basement parking level and each of the building levels.

3.3 Passenger Vehicle Parking Provision

3.3.1 Existing Vehicular Parking Provision

The existing site, containing a residential development which comprises of three x 1-bedroom dwellings and three x 2-bedroom dwellings, is serviced by six off-street car parking spaces.

Northern Beaches Council has adopted the following minimum off-street parking rates presented below for residential developments in Residential Zones, as outlined in MDCP, being relevant to the existing and proposed development:

1 resident parking space for each dwelling (irrespective of number of bedrooms), plus
0.2 resident parking spaces for each 2 bedroom dwelling, plus
0.5 resident parking spaces for each 3 (or more) bedroom dwelling
0.25 visitor parking spaces for each dwelling (irrespective of number of bedrooms)

Application of the abovementioned parking rates to the existing development yield results in the following:

(6 x 1) + (0.2 x 3) = 6.6 (adopt 7) resident spaces
(6 x 0.25) = 1.5 (adopt 2) visitor spaces

The existing site development generates a requirement for nine off-street parking spaces comprising seven resident and two visitor parking spaces in accordance with the requirements of MDCP. The existing parking provision results in a parking shortfall of three parking spaces. It is therefore considered that the exiting site development is capable of generating a reliance of up to three parking spaces within the surrounding public parking infrastructure.

3.3.2 Proposed Vehicular Parking Provision

The proposed residential development, containing three 3+ bedroom dwellings, is to be serviced by a total of six resident parking spaces and one visitor parking space.

Application of the previously presented MDCP parking rates to the proposed development yield results in the following:

(3 x 1) + (3 x 0.5) = 4.5 (adopt 5) resident spaces
(3 x 0.25) = 0.75 (adopt 1) visitor space

The proposed development therefore generates a minimum requirement for six parking spaces, comprising five resident parking spaces and one visitor parking space.

The proposed parking yield of six resident and one visitor parking spaces therefore exceeds the minimum parking requirement of MDCP and accordingly, is considered to be satisfactory.

3.4 Bicycle Parking Provision

The subject development is proposed to provide a total of two bicycle spaces provided within the ground floor parking area.

MDCP specifies the following minimum bicycle parking requirement:

One stand for every three car parking spaces with a minimum provision of one stand for each premises.

Application of abovementioned rates results in a minimum bicycle requirement of 2.3 (adopt 2) bicycles spaces.

The provision of two bicycle spaces complies with the minimum bicycle requirement of MDCP and is accordingly, considered to be satisfactory.

In the event that the abovementioned bicycle parking calculation is rounded up to three spaces, Council could reasonably impose a condition of consent necessitating the requirements for an additional bicycle parking space to be provided.

3.5 Internal Circulation and Manoeuvrability

3.5.1 Parking Design

Upon entry to the site via the access driveway connecting with North Steyne, vehicles are to proceed in a forward direction through a vehicle lift to access the ground floor parking area or utilise the lift to access the basement parking area.

The ground floor parking area provides two rows of 90-degree angled parking spaces along the eastern and western basement periphery walls, being serviced by a central parking circulation aisle and a mechanical turntable.

Similarly, the basement parking area provides a two rows of 90-degree angled parking spaces along the eastern and western basement periphery walls, being serviced by a central parking circulation aisle and a mechanical turntable.

The parking area has been designed with the following minimum dimensions in accordance with AS2890.1:2004:

- Standard 90-degree angled parking space width = 2.4m;
- Additional vehicular space width where parking spaces adjoins an obstruction = 0.3m;
- Minimum parking circulation aisle = 6.7m;
- Mechanical turntable diameter = 4.8m;
- Standard 90-degree parking space length = 5.4m; and

- Minimum clearance throughout off-street parking area and access thereto = 2.2m.

In order to further demonstrate the suitability of the abovementioned arrangement and internal passenger vehicle manoeuvrability throughout the internal circulation areas, this Practice has prepared a number of swept path plans which are included as **Appendix 2**. The turning paths provided on the plans have been generated using Autoturn software and derived from B85 and B99 vehicle specifications provided within AS2890.1:2004.

The swept path plans illustrate that passenger vehicles can generally manoeuvre throughout the parking area with a reasonable level of safety and efficiency, with the assistance of the mechanical turntable. In consideration of the above discussion, the proposed parking area layout as it relates to passenger vehicle manoeuvrability is considered to be satisfactory.

3.5.2 Mechanical Parking / Manoeuvring Installations

The following sub-section provides a general description of the usage procedure and specifications of the vehicle lift, the traffic signals governing traffic movements to / from the lift and the mechanical turntable within the basement parking level.

3.5.2.1 Specifications

Vehicle Lift Specifications

The mechanical vehicle lift system is proposed to be provided by Safetech, an appropriately experienced and qualified manufacturer. The following provides a summary of the relevant minimum required vehicle lift specifications, whilst indicative specifications are provided within **Appendix 3**:

- The lift is to provide internal dimensions of 3.5m x 5.9m;
- The lift is to provide a door opening width of 3m;
- The lift is to provide a load capacity of 3.2 tonnes;
- The lift is to provide an internal clearance of 2.3m; and
- The lift provides an ascent / descent speed of 0.2 metres per second.

Traffic Signal Specifications

The lift doors are to be governed by traffic signal lanterns to ensure only one vehicle attempts to occupy the lift at any given time. The traffic signal lanterns and the traffic lantern controllers are to be provided by AGD Systems Pty Ltd. The following provides a summary of the relevant lantern and lantern controller specifications, whilst a full data sheet provided by the manufacturer is provided within **Appendix 4**:

- Three 100mm Two Aspect 12/24Vdc – AGD13 traffic lanterns (red and green coloured lanterns) are to be provided; and

- Each lantern is to provide the dimensions of 150mm and 300mm.

Additional infrastructure associated with the traffic signal system includes the following:

- Two push buttons are to be positioned near the lift on ground and basement floor levels; and

- Signage positioned within the basement parking area specifying that vehicles are to remain within their parking spaces until a green lantern is displayed.

Mechanical Turntable Specifications

Mechanical turntables are proposed to be provided approximately central to the ground and basement parking aisles to assist the movement of vehicles between the vehicle lift and individual parking spaces.

The turntables are to be provided by Australian Turntables, providing a diameter of 4.8m and provides a rotating speed of one revolution per minute.

The turntables are to be operated by in-vehicle remotes and / or a wall mounted controller within the basement parking area.

A full data sheet provided by the manufacturer is provided within **Appendix 5**.

3.5.2.2 Site Entry Procedure

The vehicle lift is to be located at ground level in passive / default mode. Traffic signals are to be situated at on the ground level and within the basement level near the lift bay. The traffic signal system will display a green lantern at ground floor facing entering traffic and red lanterns within the ground floor and basement parking areas in passive / default mode.

In the event that the lift is located at ground floor (default mode), entering vehicles from ground floor will travel in a forward direction into the site in an unimpeded fashion to access the ground floor parking area through the vehicle lift or utilise the lift to access the basement parking area. The eastern lift door will be open under the default arrangement whilst the western lift door and lift itself will be operated either by in-vehicle remotes held by residents or a control panel within the lift.

Once positioned within the vehicle lift bay, motorists will directly enter the ground floor parking area or indeed that basement parking area following use of the lift in a simple forward direction. These vehicles will thence access the internal car parking spaces either directly or via the turntables situated within the ground or basement levels. The turntables are to be operated by in-vehicle remotes and / or wall mounted controllers within the parking areas.

3.5.2.3 Site Exit Procedure

The site exit procedure will virtually comprise the reverse of the previously described site entry procedure. As previously described, the western lift access door within the ground and basement floors are proposed to be governed by traffic signals. These signals will display a red lantern under default arrangement for vehicles exiting the site and a green lantern at ground floor for vehicles entering the site at ground level.

Motorists wishing to exit the ground or basement parking areas will call for the opening of the lift door through an in-vehicle remote or the push button situated near the lift. These motorists will be directed through signage that vehicles are to remain within their parking spaces until the red lantern becomes green. Once the traffic signal lantern turns from red to green and the western lift door has opened, a motorist may manoeuvre their vehicle in order to enter the vehicle lift in a forward direction, possibly via the central turntable. The motorist will then exit the vehicle lift at ground floor level in a forward direction to exit the site via the access the site driveway connecting with North Steyne in a forward direction.

3.5.2.4 Queueing Analysis

The mechanical vehicle lift will be required to travel a vertical span of 3.15m from the default position at ground floor and thence to the basement floor. On the basis of a total cycle lift travel distance of 6.3m (3.15m + 3.15m) and the previously presented lift travel speed of 0.2 m/s, the total lift travel time is calculated to be 31.5 seconds (6.3m / 0.2 m/s).

In addition to the lift travel time, a single lift cycle time is also required to include time taken for lift doors to open, close, vehicles to enter and exit the lift, dwell time following a vehicle exiting a lift and the door closing and lift speed to slow on approach to a stop. To account for this activity, an additional 60 seconds has been applied to the total lift travel time, based on advice from the lift manufacturer, resulting in a total lift cycle time of 91.5 seconds.

Further to the above, some vehicles are expected to utilise the mechanical turntable when travelling between the lift and individual parking spaces within the ground or basement. For the purposes of this assessment and in order to create an absolute worst-case scenario, it is assumed that, on average, a half revolution on the proposed mechanical turntable will be required to enter / exit all parking spaces. On the basis of the proposed turntable providing a revolution speed of 60 seconds per revolution, in a worst-case scenario, an additional 30 seconds service time is required for the turntable operation.

Based on the above, a total cycle service time of 121.5 seconds is required.

Based on the above operational characteristics, the potential for queueing within the site access driveway has been investigated in order to assess the suitability or otherwise of the access arrangements as required by Clause 3.5 of AS2890.1:2004.

The queueing analysis incorporates the following critical operational characteristics of the mechanical parking system and the proposed development:

- The development is projected to generate two peak hour vehicle movement during peak periods (see Section 5.2 of this Report); and

- The service rate is calculated based on the mechanical vehicle lift system's ability to accommodate 29.6 vehicle dispatch / retrieval movements per hour (3,600/121.5).

On the basis of the above critical system characteristics, the following queueing analysis is provided in accordance with standard (M/M/1) procedures, a first-in-first-out basis (FIFO) and a Poisson process for the arrival and service rates:

$$a = arrival\ rate$$

$$s = service\ rate$$

$$p = utilisation\ rate\ (\frac{a}{s})$$

$$E(m) = Mean\ number\ of\ vehicles\ in\ queue\ \left(\frac{p}{1-p}\right) - p$$

$$P(n) = \ Discrete\ probability\ of\ n\ vehicles\ within\ the\ system\ (1-p)p^n$$

On this basis, the following analysis is provided:

- The arrival rate is 2 vehicles every hour;

- The service rate is 29.6 vehicles per hour;

- The utilisation rate is the arrival rate divided by the service rate is (2/29.6) or p = 0.067;

- The average number of vehicles in the queue is 0.0048 vehicles [$E(m) = \frac{\mathrm{p}}{(1-\mathrm{p})} - p$];

- The probability of zero vehicles in the system: $(1-p)p^0$ = 0.9331 (93.31%);

- The probability of one vehicle in the system: $(1-p)p^1$ = 0.0624 (6.24%);

- The probability of two vehicles in the system: $(1-p)p^2$ = 0.0041 (0.41%);

- The probability of three vehicles in the system: $(1-p)p^3$ = 0.00028 (0.028%); and

- The probability of four vehicles in the system: $(1-p)p^4$ = 0.000018 (0.0018%).

Application of the abovementioned calculations results in the following:

- The probability of one or more vehicles in the system
  - 1 - 0.9331 = 0.0669 (6.69%);
- The probability of two or more vehicles in the system
  - 1 - 0.9331 - 0.0624 = 0.0045 (0.45%);
- The probability of three or more vehicles in the system
  - 1 - 0.9331 - 0.0624 - 0.0041 = 0.0003 (0.03%); and
- The probability of four or more vehicles in the system
  - 1 - 0.9331 - 0.0624 - 0.0041 – 0.00028 = 0.00002 (0.002%).

Due to the nature of the proposed development access arrangements, the presence of a second vehicle within the system is potentially capable of generating a queue that extends beyond the property boundary.

According to the above, the scenario whereby a two or more vehicles are within the system has been calculated to occur 0.45% of the time during peak periods. This means that the proposed operation of the site access arrangements is therefore capable of accommodating in excess of the 98th percentile queue and the queuing capacity of the system therefore complies with Clause 3.5 of AS/NZS2890.1:2004. The site access arrangements accordingly do not require any designated waiting or passing bay provision, either within the site or within North Steyne.

3.5.2.5 Mechanical Installation Servicing / Emergency Procedures

Mechanical vehicle lift, traffic signal and turntable systems such as that described above are typically fitted with a battery powered back up system to ensure that they continue to operate during power black outs. It is further understood that the mechanisms such as that proposed tend to be very reliable and rarely malfunction. However, in the event of a malfunction occurring, the manufacturer provides a maintenance crew which is on call 24 hours per day seven days a week, which will be dispatched to the site immediately and arrive at most within 90 minutes. Further, the system incorporates a computer which in most cases can self-diagnose a problem and inform service personnel who can often fix the issue remotely via the internet.

Advice from manufacturers has also indicated that regular bi-monthly servicing of the systems is recommended and generally adopted in order to keep the systems and mechanisms in satisfactory working order and to identify and diagnose potential issues early.

Whilst the indicative location of the traffic signal lanterns, push buttons and turntable operating panels are illustrated on the architectural plans. Notwithstanding this, the specific details of the mechanical systems are typically specified by manufacturers at construction certificate stage, complete with a management plan, including measures to be implemented during malfunctions or blackouts.

3.5.3 Bicycle Parking Design

Bicycle parking rails are to be provided within the storage areas of the ground floor parking area. These bicycle parking rails have been designed with the following minimum characteristics complying with AS2890.3:2015:

- Bicycle envelope width = 0.6m;
- Bicycle envelope length = 1.8m; and
- Minimum bicycle parking aisle and access path width = 1.8m.

3.6 Site Servicing

The subject development is anticipated to generate the requirement for regular waste collection vehicle servicing. Garbage bins are proposed to be contained within a storage area. These bins are thence to be temporarily transported to the adjoining North Steyne frontage for collection in a similar manner to other properties in the subject vicinity.

4. EXISTING TRAFFIC CONDITIONS

4.1 Surrounding Road Network

The following provides a description of the local road network surrounding the subject site:

- **North Steyne** performs an unclassified regional road function under the care and control of Northern Beaches Council, primarily providing a north-south alignment between Bridge Road / Cameron Avenue in the north and South Steyne in the south.

  Adjacent to the north, North Steyne provides an approximate pavement width of 8m facilitating one through lane of traffic in both directions. Further to the above, '2P' time restricted 90° indented parking is provided along the eastern side of North Steyne, whilst kerb-side parking along the western is governed by 'No Stopping' restrictions. Traffic flow within North Steyne is governed by a high pedestrian activity area speed limit of 30km/h.

  To the north of the site, North Steyne forms a T-junction with Pine Street operating under 'Stop' signage control with North Steyne performing the priority route.

  To the south of the site, North Steyne forms a series of T-junctions with Carlton Street, Steinton Street, Denison Street and Raglan Street operating under major / minor priority control, with North Steyne performing the priority route in all instances.

- **Raglan Street** performs an unclassified regional road function under the care and control of Northern Beaches Council, connecting with Pittwater Road / Belgrave Street to the west, and thence providing a local function which links with Griffiths Street further to the west.

  Within the vicinity of North Steyne, Raglan Street provides an approximate pavement width of 10m facilitating one through lane of traffic in both directions in conjunction with bicycle lanes along both kerb alignments. Traffic flow within Raglan Street is governed by a high pedestrian activity area speed limit of 30km/h.

  Raglan Street forms an intersection with Pittwater Road and Belgrave Street operating under traffic signal controls.

- **Pine Street** performs a local access road function under the care and control of Northern Beaches Council, primarily providing an east-west alignment between North Steyne in the east and Collingwood Street in the west.

  Pine Street provides an approximate pavement width of 12m facilitating one through lane of traffic in both directions in conjunction with '2P' time restricted parallel parking along both kerb alignments. On approach to North Steyne, traffic flow within Pine Street is governed by a high pedestrian activity area speed limit of 30km/h.

To the north-west of the site, Pine Street forms a T-junction with Pittwater Road operating under traffic signal control.

- **Pittwater Road** performs a State Road function under the care and control of TfNSW, primarily providing a primarily north-south connection between Many in the vicinity of the site and Barrenjoey Road / Mona Vale Road in the north.

4.2 Existing Traffic Volumes

Recent traffic observations have indicated that traffic demands within the abutting North Steyne is notable during peak periods, being located within the vicinity of Manly / Queenscliff Beach and the surrounding amenities. Traffic demands are considerable during summer peak periods, although delays are primarily the result of vehicles manoeuvring to / from the 90° parking spaces along the side of North Steyne.

The traffic signal-controlled Pittwater Road intersections at Pine Street and Raglan Street provide motorists wishing to access and vacate the precinct with safe and efficient connectivity.

Traffic demands outside of weekday commuter peak periods are significantly reduced providing notable additional capacity to accommodate additional demands.

4.3 Sustainable Transport

4.3.1 Buses

The following bus routes provide services within the vicinity of the site:

- Route 166 – Frenchs Forest to Manly via Dee Why Beach; and
- Route 167 – Warringah Mall to Manly via South Curl Curl.

Routes 166 and 167 operates along North Steyne and services a bus stop at approximately 80m walking distance (1-minute walk) to the north of the site. Collectively, Routes 166 and 167 provide a service frequency of 10 – 20 during weekdays, extending to up to 20 – 30 minutes at other times.

4.3.2 Ferry

The site is situated in close proximity to ferry services at Manly Wharf (approximately 1km walking distance or a 15-minute walk) to the south of the site.

The Manly Wharf provides access to the F1 Manly ferry service which operates between Circular Quay and Manly at a 20-minute frequency during weekday commuter peaks, extending to up to 30 minutes at other times.

4.4.3 Pedestrians / Cyclist

Pedestrians are provided with the following access and mobility infrastructure within the immediate vicinity of the subject site:

- Footpaths are provided along both sides of North Steyne, Pittwater Road, Carlton Street, Raglan Street and Pine Street;
- A marked raised pedestrian crossing is situated across North Steyne immediately to the south of Pine Street;
- Signalised pedestrian crossings are provided at all approaches to the intersection of Pittwater Road and Pine Street; and
- Signalised pedestrian crossings are provided at all approaches to the intersection of Pittwater Road and Raglan Street.

5. PROJECTED TRAFFIC CONDITIONS

5.1 Traffic Generation

Traffic generation rates for various land-uses have been established through extensive surveys undertaken throughout NSW and published within TfNSW's *Guide to Transport Impact Assessment*. The following sub-sections provide a summary of the traffic generating potential of the existing and proposed site uses.

Medium Density Residential Flat Dwellings:
0.39 trips per dwelling during the morning peak
0.37 trips per dwelling during the evening peak

5.1.1 Existing Site Uses

Section 1.3.3 of this report presented that the subject site currently contains a medium density residential apartment building, containing six dwellings comprising of three x 1-bedroom dwellings and three x 2-bedroom dwellings.

Application of the previously discussed traffic generation rates to the existing site results in the following peak hour traffic generation:

0.39 x 6 = 2.3 (adopt 3) trips

The existing site use is therefore considered to be capable of generating a total of three peak hour vehicle movements to or from the site.

5.1.2 Proposed Development

Section 2.1 of this report presents that the subject development is proposed to accommodate three three-bedroom dwellings.

Application of the above discussed traffic generation rates to the proposed development yield results in the following peak hour traffic generation:

0.39 x 3 = 1.2 (adopt 2) trips

The proposed development yield is projected to provide a traffic generating capacity of two peak hour vehicle trips in the morning and afternoon peak hours.

5.2 Traffic Impacts

The proposed development has been projected to generate up to two peak hour trips to and from the site, this equates to approximately one vehicle movement every 30 minutes during commuter peaks. Such a level of traffic is one vehicle trip fewer than that capable of being generated by the existing site uses. Further, it is noteworthy that the proposed site development will effectively remove the existing requirement for vehicles to enter and / or exit the site via a reverse movement. The removal of such undesirable movements is expected to result in

a considerable improvement to the overall level of safety and efficiency of adjoining public road pedestrian and vehicle movements. The development is accordingly expected to result in improved operational performance of the surrounding local road network.

5.3 Transport Impacts

The subject site is located approximately within reasonably close walking distance to a number of bus services operating along North Steyne and ferry services operating out of the nearby Manly Wharf. It is accordingly expected that a portion of the future residents within the subject development will utilise the surrounding public transport infrastructure to access destinations throughout the Sydney metropolitan area. The capacity of the existing public transport system is however not envisaged to be measurably affected by any additional demand associated with the development, given its limited scale.

6. PRELIMINARY CONSTRUCTION MANAGEMENT PLAN

6.1 Introductory Statement

This Section of the report constitutes a preliminary Construction Traffic Management Plan (CTMP) addressing the traffic access and safety issues associated with construction works associated with the proposal. CTMPs are generally prepared at Construction Certificate stage following the commissioning of a builder thereby allowing a greater appreciation of the likely construction methodology and therefore the required traffic management measures to be implemented.

The terms of the initiatives contained within the following subsections of this report are therefore somewhat generic and some modifications may be needed by or on behalf of the successful builder / civil contractor at Construction Certificate stage depending on their feasibility taking into consideration all project requirements.

6.2 Traffic Management During On-Site Works

The construction works are likely to be undertaken within three separate stages as follows:

- Stage 1 – Demolition, excavation and shoring;
- Stage 2 – Construction of new site structures; and
- Stage 3 – public domain works.

The scale of the development is such that the construction works will encompass a significant majority of the site. Construction vehicles larger than passenger vehicles are therefore not able to be wholly accommodated on-site. Construction vehicles servicing the site during the construction phases of the development will therefore need to be accommodated within the adjoining western North Steyne footway, clear of the footpath.

It is accordingly proposed that a construction compound be implemented along the western North Steyne footway, between the western footpath and the eastern site boundary. Construction vehicles up to and including 8.8m long Medium Rigid Vehicles (MRVs) will enter the construction compound via a forward left turn movement from North Steyne, where they will be loaded / unloaded directly to / from the site. Upon completion of loading / unloading activity, construction vehicles will exit the construction compound via a forward left turn movement back to North Steyne.

Construction fencing is proposed to define the northern, western and southern site boundaries, whilst Class A Hoarding is proposed to define the abovementioned construction compound, effectively separating this compound from adjacent public road pedestrian activity.

An application to Council will be made in relation to the construction compound and associated hoarding, including the payment of appropriate fees.

6.3 Traffic Management during Public Domain Works

Following the undertaking of the previously presented site works, the development will involve the following public domain works:

- The modification of an existing gutter crossing connecting with North Steyne; and

- The connection of the site to existing services within North Steyne.

The abovementioned public domain works will require the temporary closure of the western North Steyne footpath and the diversion of pedestrians to the eastern North Steyne footpath via pedestrian crossings to the north and south of the site. Traffic Control Plans associated with this public road occupation will be prepared and submitted to Council for assessment. The traffic and pedestrian management measures to be implemented are to be certified on the Traffic Control Plans as being in accordance with the Australian Standard for *Manual of Uniform Traffic Control Devices* (AS1742) and TfNSW's *Traffic Control at Work Sites* manual.

Appropriate road use permits, including the payment of fees, will be sought and obtained from Northern Beaches Council associated with the abovementioned construction activities requiring public road occupation. Further, adjoining property owners are to be advised of the implementation of any temporary traffic control measures as required by Council.

Any other unforeseen works which may necessitate the temporary occupation of the public roadway associated with the construction works will require separate formal approval from Council, via the preparation of a Traffic Control Plan in accordance with AS1742 and TfNSW's manual.

6.4 Safe Ingress and Egress of Construction Traffic

It has previously been presented that construction vehicles larger than passenger vehicles will not access the subject site, rather all construction vehicles up will service the site via the establishment of a construction compound within the western portion of the western North Steyne footway, clear of the western footpath.

Vehicles accessing the construction compound will do so via a simple forward left turn movement from North Steyne. Similarly, construction vehicles will exit the construction compound via a simple forward left turn movement back to North Steyne.

All construction vehicle access and egress movements to / from the construction compound are to be strictly controlled by appropriately qualified traffic controllers. Traffic controllers are not to stop traffic on the public street to allow trucks to enter or leave the Works Zone/s. They must wait until a suitable gap in

traffic flows allows them to assist construction vehicles to enter or exit the Works Zone/s. The Roads Act does not give any special treatment for trucks leaving a Works Zone – the vehicles already on the road have right of way.

No queuing / marshalling of construction vehicles is to occur in any public road.

The abovementioned traffic controllers are to also supervise pedestrian movements within the western North Steyne footpath adjacent to the construction compound to ensure there is no unreasonable conflicts or delays for pedestrian movements.

6.5 Construction Vehicle Transport Routes

Construction vehicles are to access and vacate the subject site utilising Pittwater Road as the main approach / departure route. The following provides a description of the construction vehicle transit routes:

Inbound Route

Pittwater Road, left turn or right turn at Carlton Street, left turn at North Steyne and thence a forward left turn to the western North Steyne footway construction compound.

Outbound Route

Forward left turn from the western North Steyne footway construction compound to North Steyne, left turn to Pine Street and thence a left turn or right turn to Pittwater Road.

Pittwater Road provides good connectivity to surrounding arterial routes servicing the Sydney metropolitan area via Sydney Road thereby indicating that construction vehicles are able to access and depart the site creating very little disturbance to surrounding local road traffic flow.

The multiple directional traffic lanes and / or roadway pavement widths of the approach and departure routes are such that heavy vehicle manoeuvring is able to occur without any unreasonable encroachment on opposing travel lanes, kerbs and / or parking lanes. None of the abovementioned roads are light thoroughfares or are restricted by load limits.

The limitation of construction vehicle sizes to being that consistent with refuse collection vehicles will limit any potential impacts of construction vehicle circulation throughout the road network as required.

6.6 Parking Control

Further to the large construction vehicles described above, construction employee / tradesperson passenger vehicles are to be accommodated within the ground and basement parking area when constructed. Construction personnel not provided with on-site car parking are required to travel to and from the site via one of the below methods:

- Utilise public transport to the site (the site is well serviced by previously presented bus and ferry services operating within the subject vicinity); and / or

- Car pool with other construction workers who are provided with on-site parking.

The above transport options will form part of the conditions of commissioning when engaging the relevant site workers and as such form part of any site induction process.

6.7 Construction Traffic Generation

The construction works are likely to generate a maximum of one heavy vehicle per hour servicing the site, although during peak periods, such as concrete pours, this may increase to two heavy vehicles per hour.

In general, the construction activities are projected to generate less traffic than the existing or proposed future use, thereby indicating suggesting that impacts will be minimal. During periods of more heavy construction vehicle generation, drivers are to be instructed by radio when to arrive at the site to ensure that there is no vehicle queuing or parking within the adjoining road network. This is to be strictly adhered to.

6.8 Traffic Impact

The recent traffic investigations of the adjoining road network and the analysis contained within previous sections of this report have indicated that motorists are provided with a reasonable level of service within the immediately adjoining public road network. It is therefore considered that the limited traffic generation associated with the construction activities can be accommodated without any unreasonable impacts on adjoining vehicle movements considering the previously mentioned maximum hourly traffic generation.

Notwithstanding the above, it is recommended that construction vehicle movements to and from the site be minimised and eliminated where possible during road network peak periods (7:00am – 9:00am and 4:00pm – 6:00pm).

6.9 Impacts on Pedestrians

Pedestrian demands along North Steyne are notable however pedestrian movements adjacent to the site are to occur in an unimpeded fashion during most periods of construction.

Whilst the public domain works associated with the development involve the temporary full closure of the western North Steyne footpath, pedestrian accessibility and mobility is to be maintained at all times through the diversion of pedestrian movements and appropriate ancillary measures, which will be governed by the preparation and implementation of appropriate Traffic Control Plans. The temporary closures of the footpath adjoining site are therefore most

unlikely to result in any unreasonable impacts on the amenity of pedestrian movements.

Unimpeded pedestrian access to adjoining developments and indeed, nearby bus stops, will be maintained at all times.

Construction fencing will protect pedestrians from dust and debris.

No unreasonable impacts on the safety or mobility of pedestrians are therefore anticipated during the construction works associated with the subject development.

7. CONCLUSION

This report assesses the potential traffic and parking implications associated with a residential development containing three dwellings at 92 North Steyne, Manly. Based on this assessment, the following conclusions are now made:

- The existing site development, comprising six dwellings, which is serviced by six on-site parking spaces, results in a reliance on surrounding public infrastructure to accommodate a car parking demand of up to three spaces, based on established parking requirements of MDCP;

- The proposed off-street vehicular parking provision exceeds minimum established parking requirements of MDCP;

- The proposal is accordingly expected to considerably reduce the existing potential reliance on the surrounding public car parking infrastructure, thereby improving general parking amenity of the precinct;

- The proposed off-street bicycle parking provision complies, or is capable of complying, with the established parking requirements of MDCP;

- The existing site access and internal circulation arrangements result in some motorists being required to either enter or exit the site via a reverse movement;

- The proposed altered site access and internal circulation arrangements facilitate forward site entry and exit movements, thereby considerably improving the existing level of safety and efficiency;

- The implementation of the proposed internal traffic signal and vehicle lift management system to govern the internal circulation arrangements and the mechanical vehicle lift is expected to effectively facilitate safe and efficient internal passenger vehicle circulation arrangements, compliant with the relevant requirements of AS2890.1:2004;

- The existing site development is projected to generate three vehicle movements to and from the site during weekday commuter peak periods;

- The surrounding road network operates with a reasonable level of service during peak periods;

- The subject development has been projected to generate up to two peak hour vehicle trips to and from the subject site, being one trip fewer than being capable of being generated by the existing site development; and

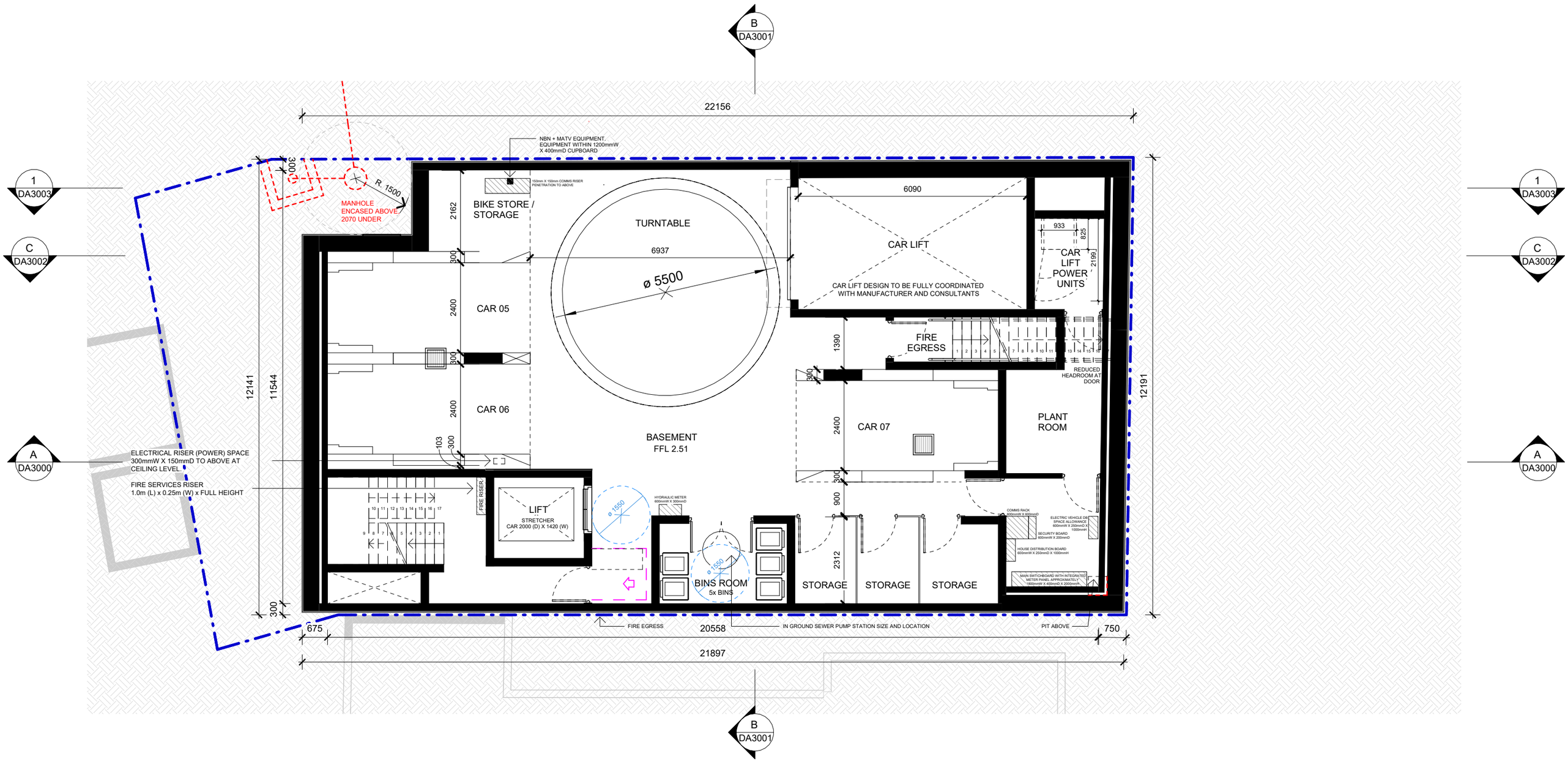
- The proposal is accordingly expected to result in a reduced extent of impacts on the surrounding public road network in comparison to the existing site development; and

- The impacts of construction activities on adjoining traffic and pedestrian traffic are not anticipated to be unreasonable or exceed that which could be

expected associated with the future operation of the proposed development.

It is considered, based on the contents of this report and the conclusions contained herein, there are no traffic or parking related issues that should prevent approval of the subject application. This action is therefore recommended to Council.

APPENDIX 1



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REVISION	DATE	DESCRIPTION	BY
DA1	17/04/25	DA SUBMISSION	DN/EDC

REVISION NOTES

2/40 East Esplanade
Manly, NSW 2095 Australia
Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE
Basement Floor Plan

PROJECT
NSM2

SCALE	STATUS	NUMBER	REVISION
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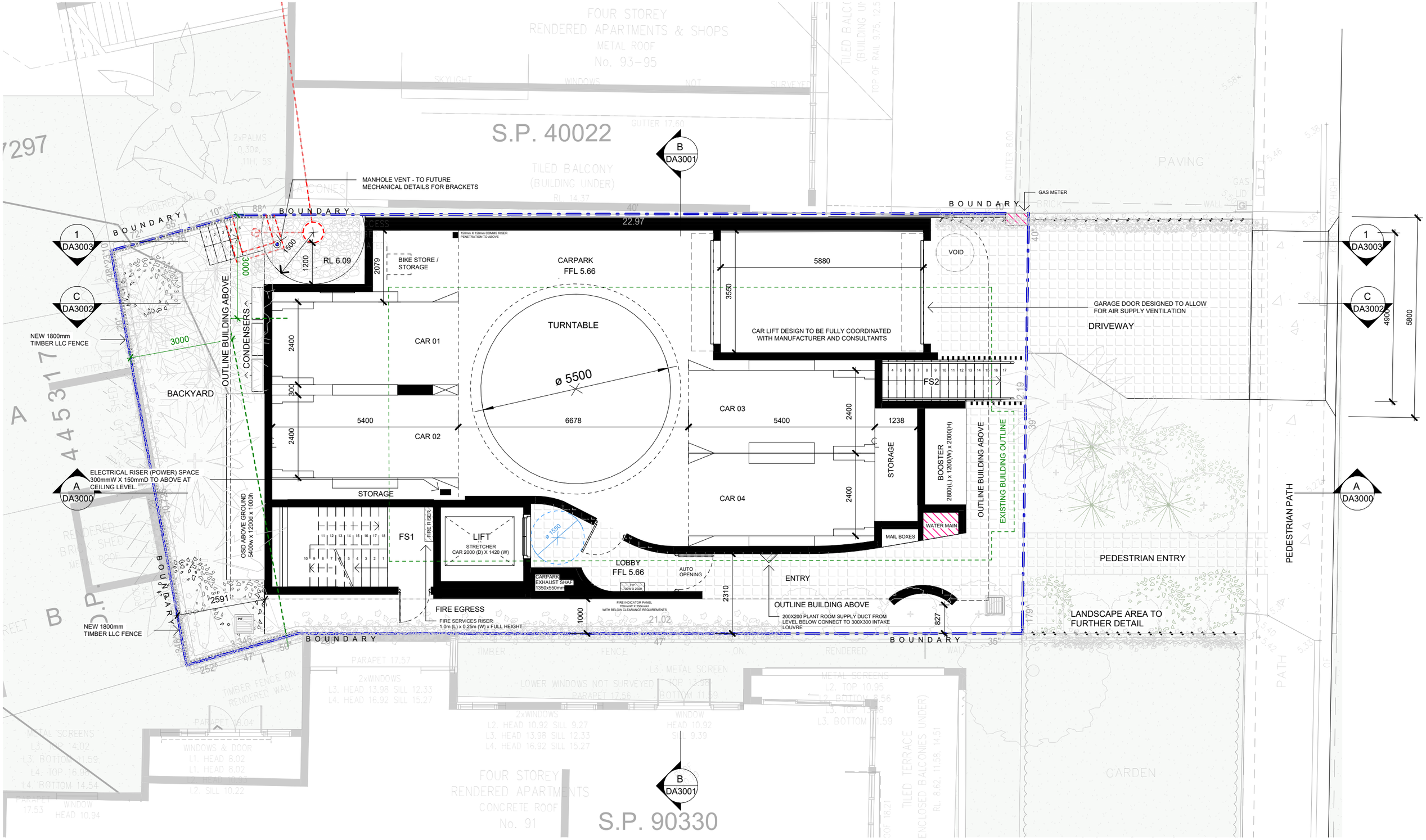

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Manly, NSW 2095 Australia
Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE
Ground Floor Plan

PROJECT
NSM2

SCALE	STATUS	NUMBER	REVISION
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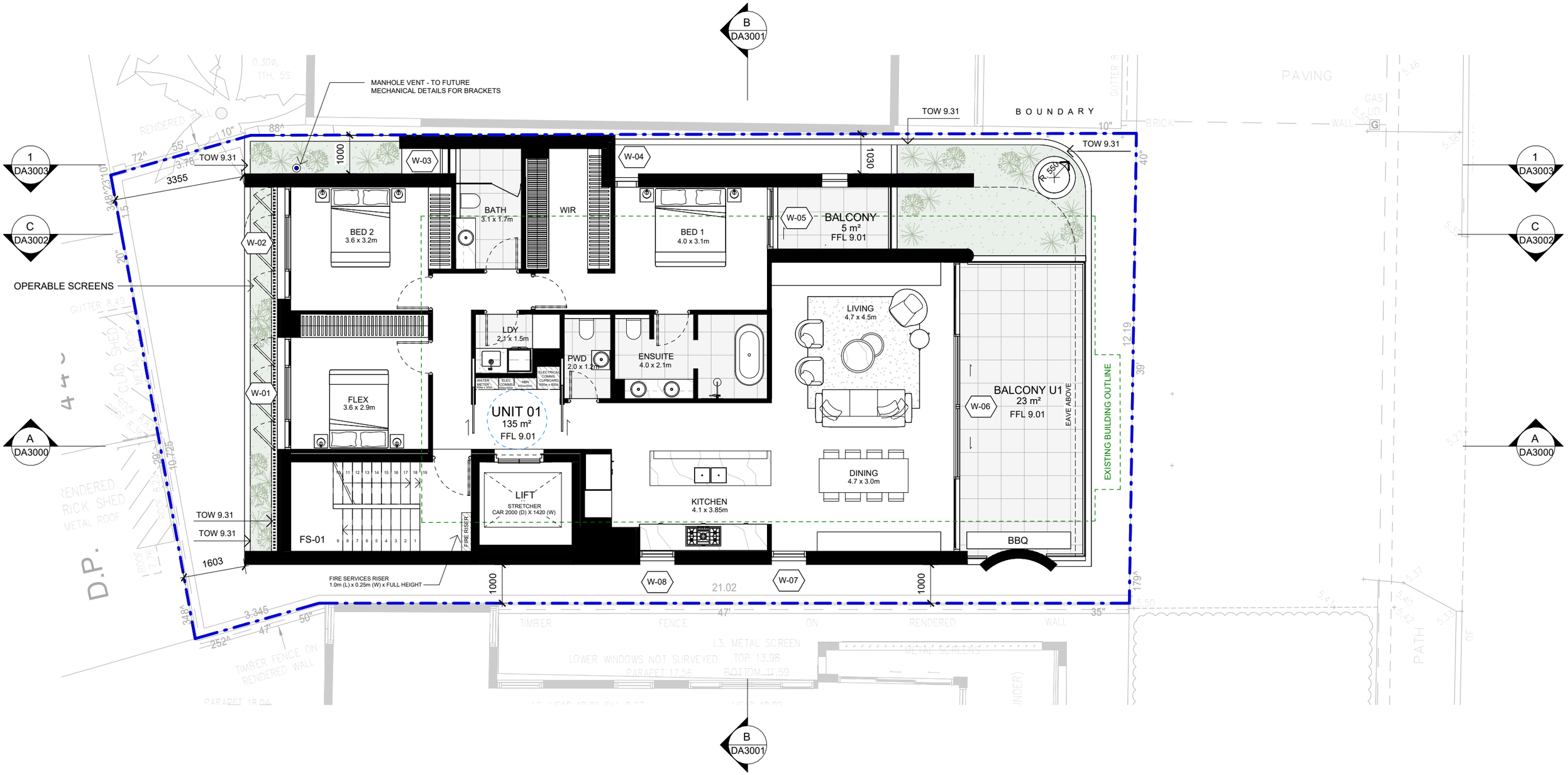

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Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: Level 1 Floor Plan

PROJECT: NSM2

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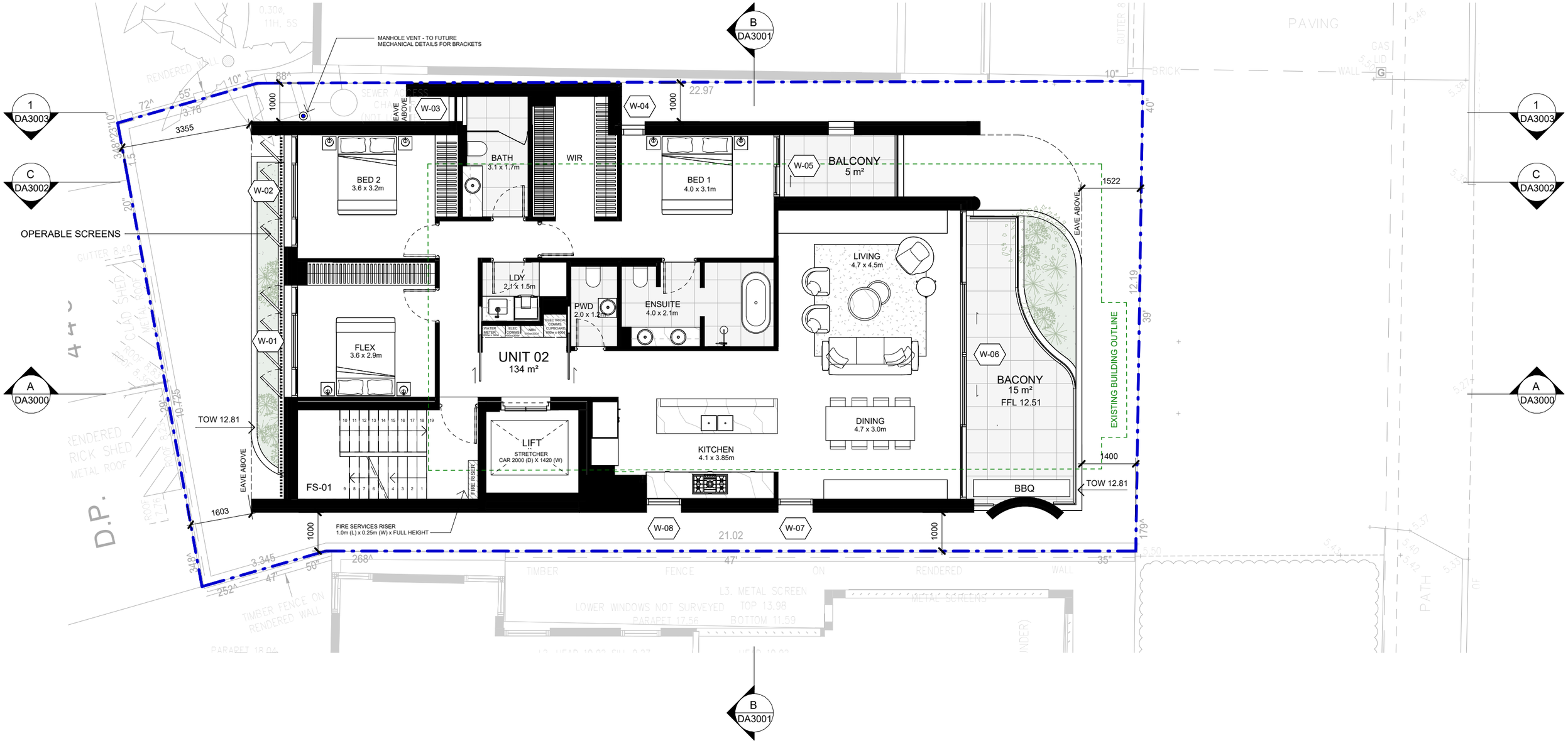

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Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

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FOR DEVELOPMENT APPLICATION

DRAWING TITLE: Level 2 Floor Plan

PROJECT: NSM2

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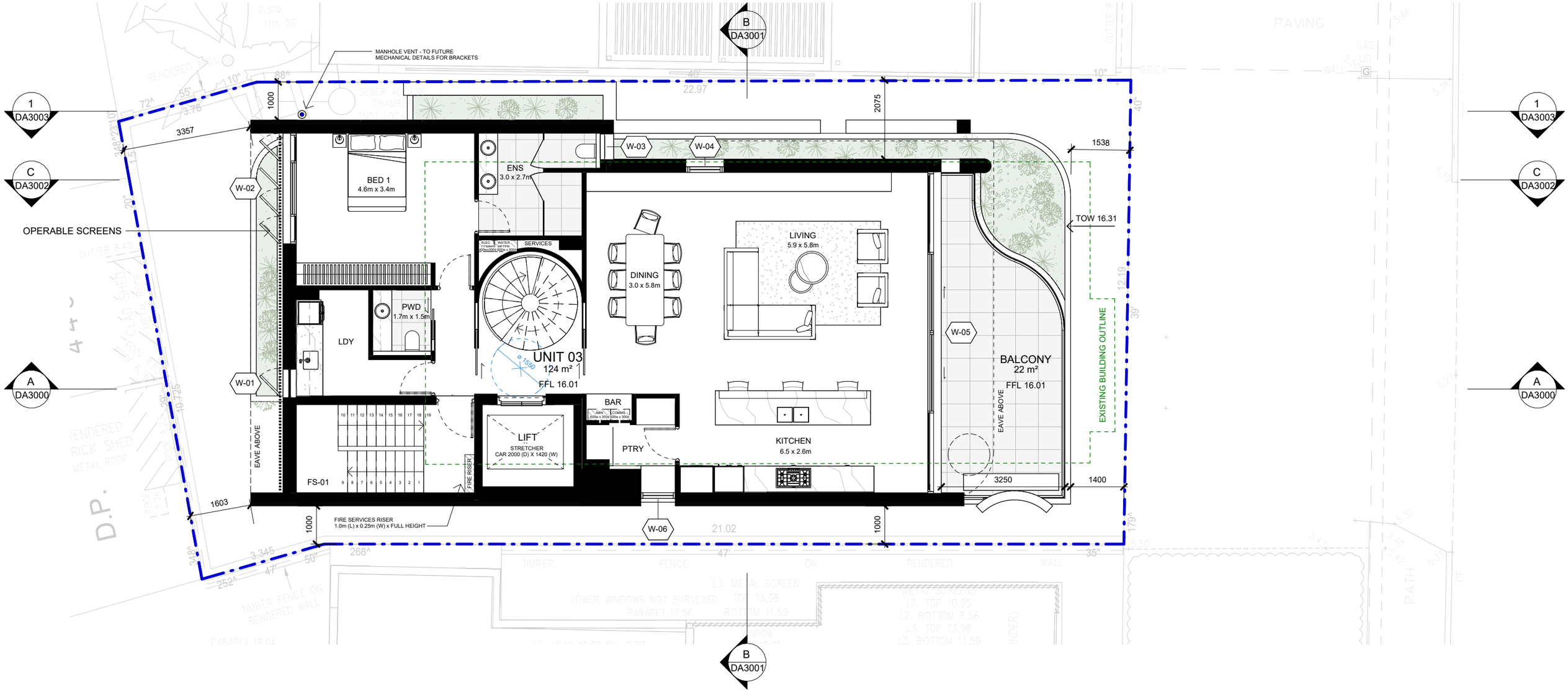

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Manly, NSW 2095 Australia
Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: Level 3 Floor Plan

PROJECT: NSM2

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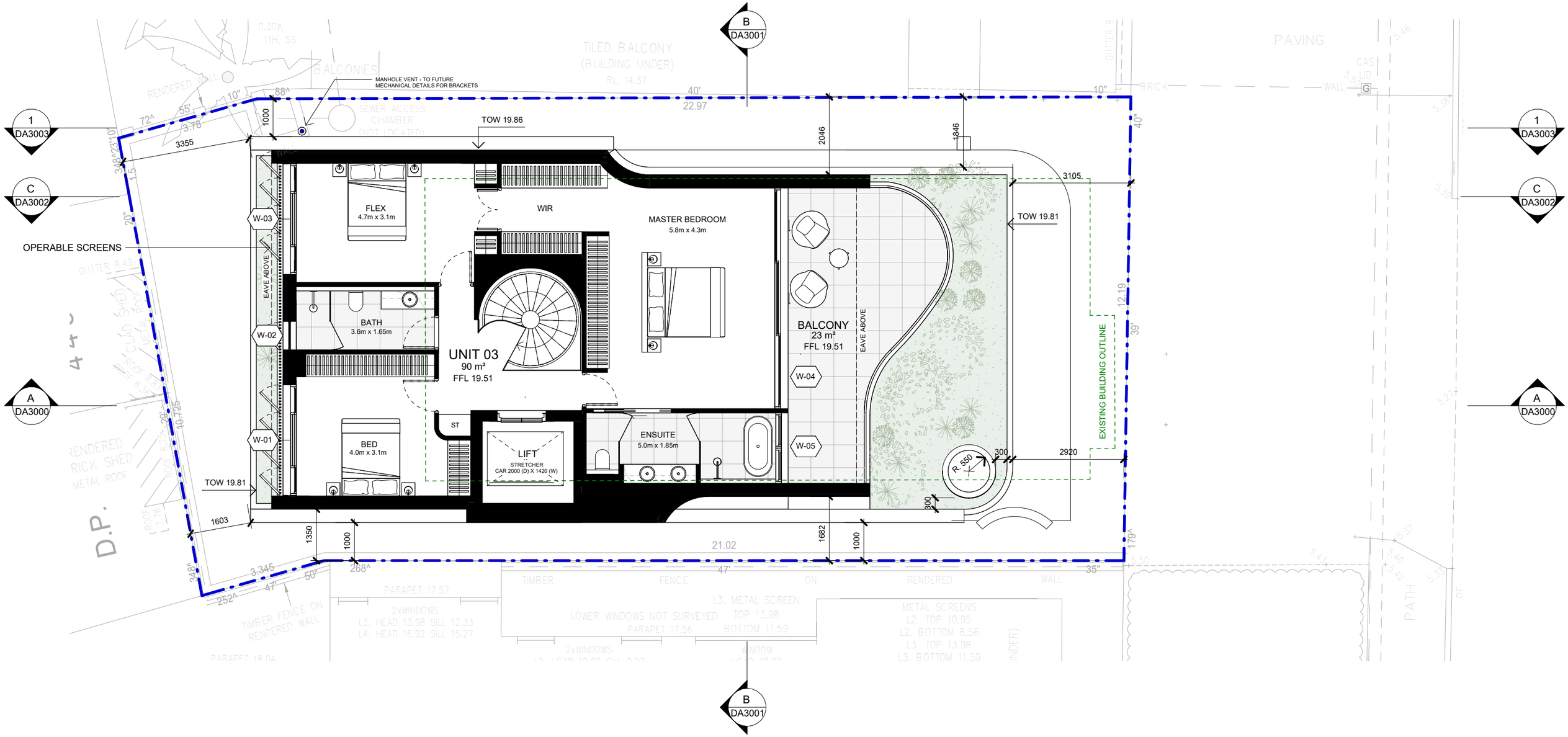

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Manly, NSW 2095 Australia
Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: Level 4 Floor Plan

PROJECT: NSM2

SCALE	STATUS	NUMBER	REVISION
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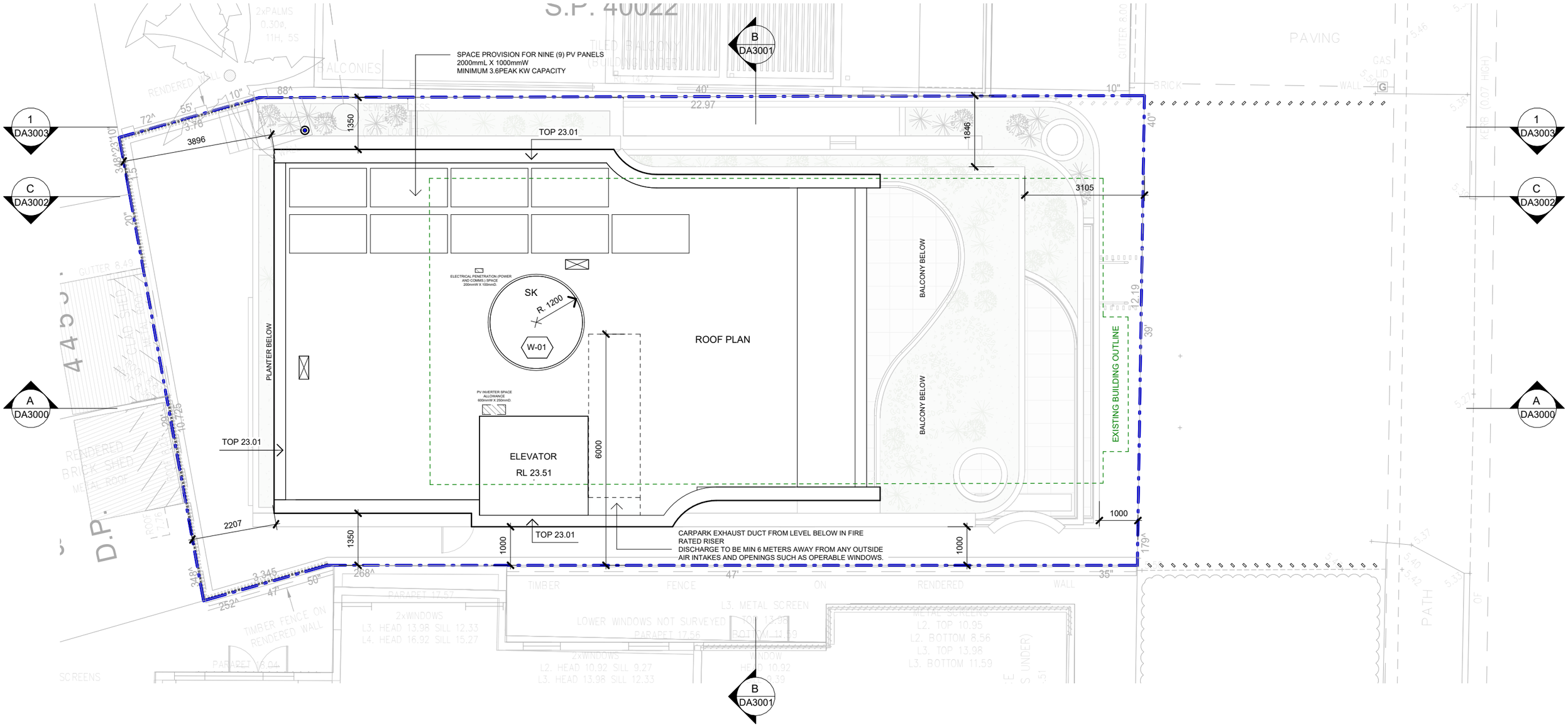

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2/40 East Esplanade
Manly, NSW 2095 Australia
Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: Roof Floor Plan

PROJECT: NSM2

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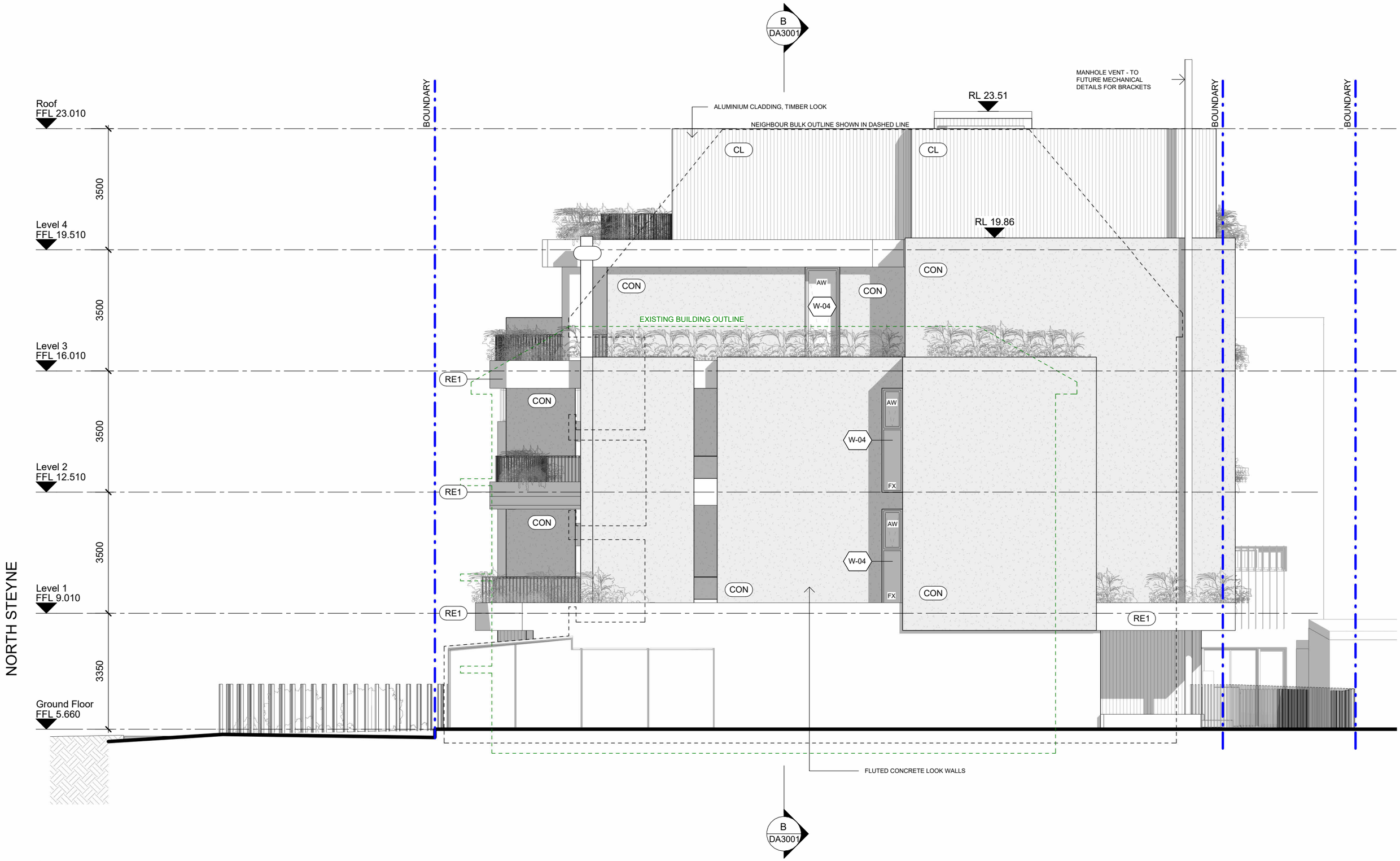

1 North Elevation

1 : 100

FOR DEVELOPMENT APPLICATION

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Nominated Architect:
Bridie Gough 8280

NSM2

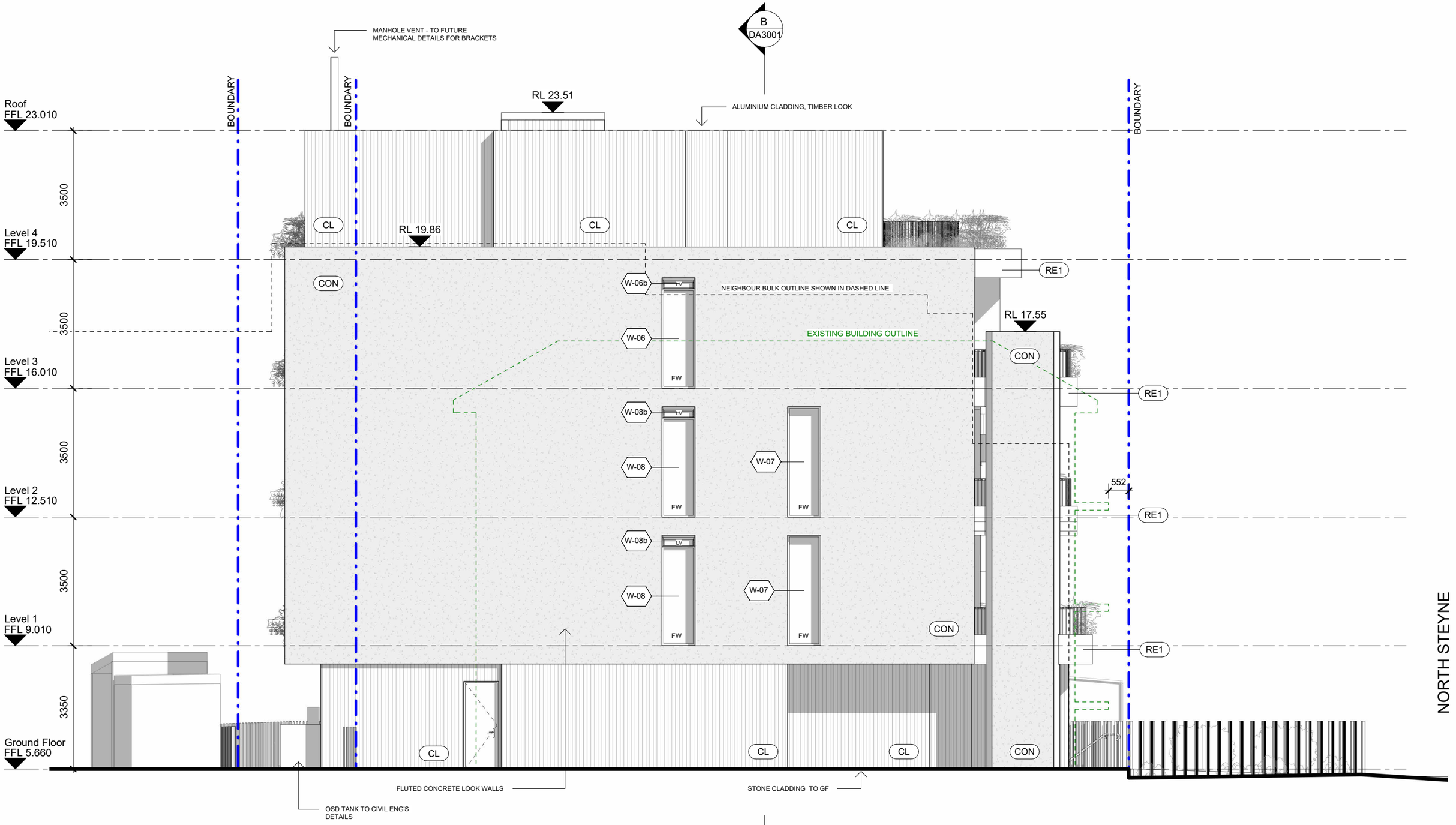
92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: North Elevation

PROJECT: NSM2

SCALE: 1 : 100 | STATUS: DA | NUMBER: DA2000 | REVISION: DA1



1 South Elevation

1 : 100

FOR DEVELOPMENT APPLICATION

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Manly, NSW 2095 Australia
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Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: South Elevation

PROJECT: NSM2

SCALE	STATUS	NUMBER	REVISION
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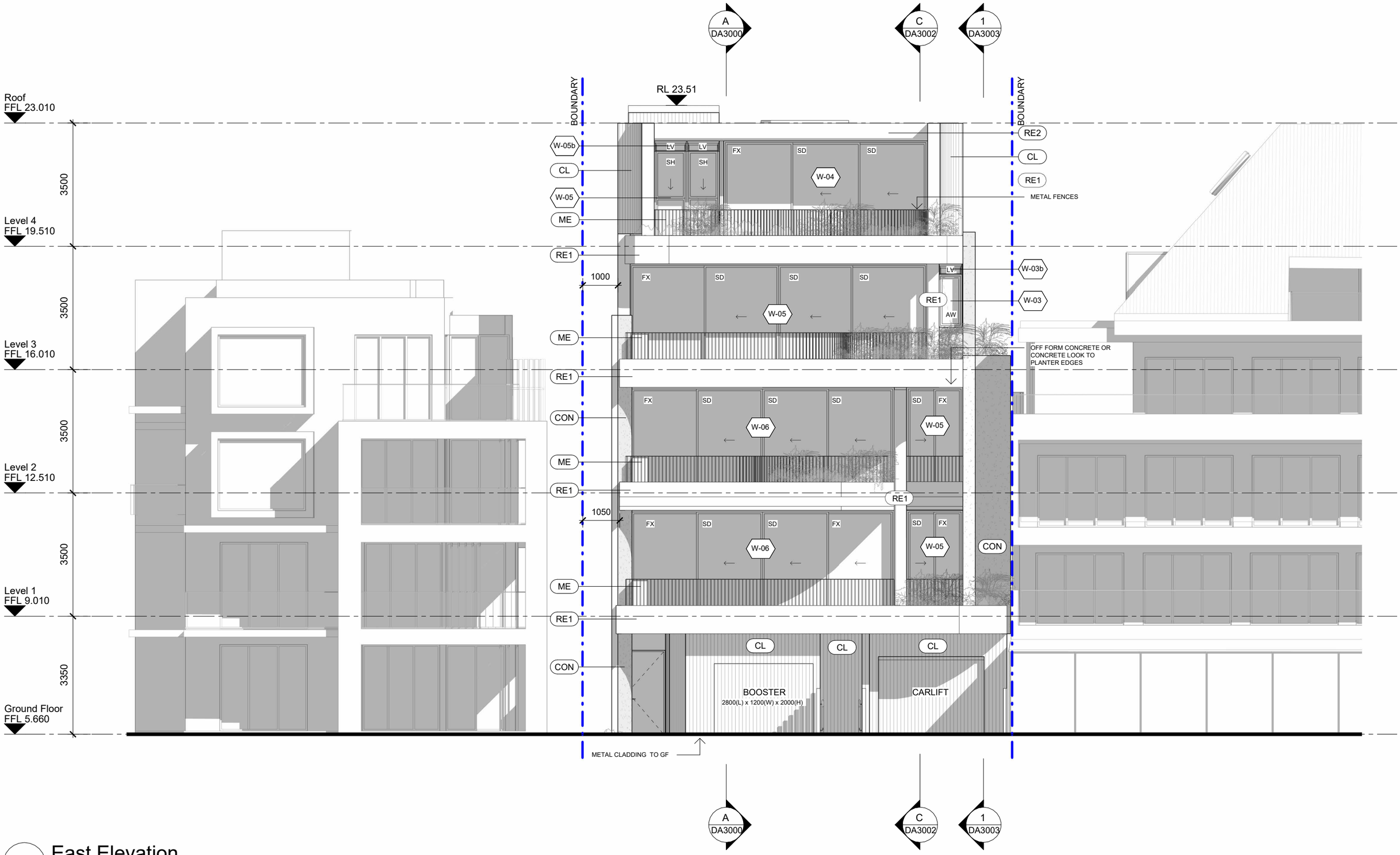

1 East Elevation

1 : 100

FOR DEVELOPMENT APPLICATION

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2/40 East Esplanade
Manly, NSW 2095 Australia
Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: East Elevation

PROJECT: NSM2

SCALE	STATUS	NUMBER	REVISION
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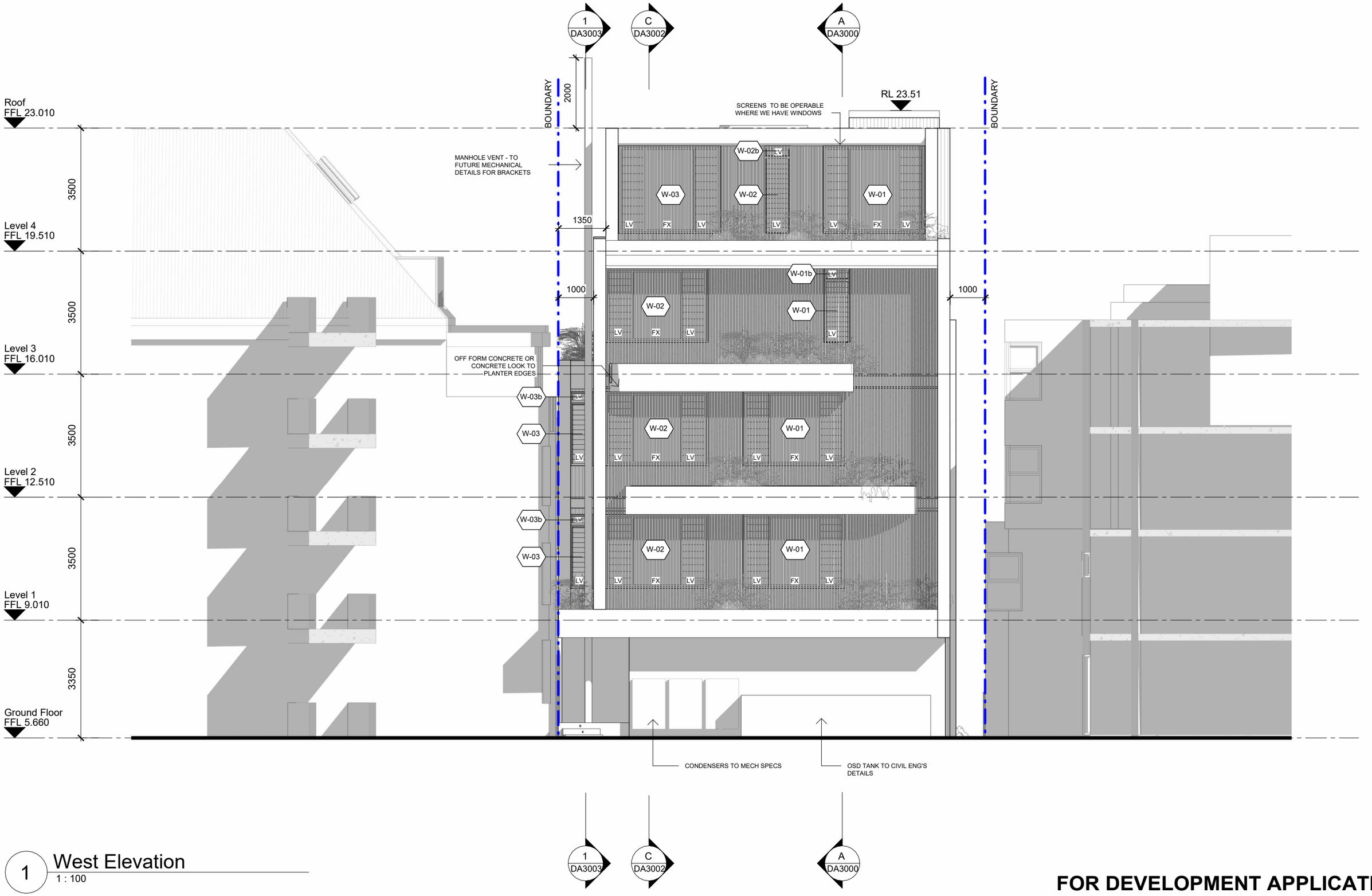

1 West Elevation

1 : 100

IMPORTANT NOTES:
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- THE ESTUARINE PLANNING LEVEL IS MLN 3.1M AHD. ALL LEVELS TO AHD.

REVISION	DATE	DESCRIPTION	BY
DA1	17/04/25	DA SUBMISSION	DN/EDC

REVISION NOTES

2/40 East Esplanade
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Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

FOR DEVELOPMENT APPLICATION

DRAWING TITLE	PROJECT
West Elevation	NSM2

SCALE	STATUS	NUMBER	REVISION
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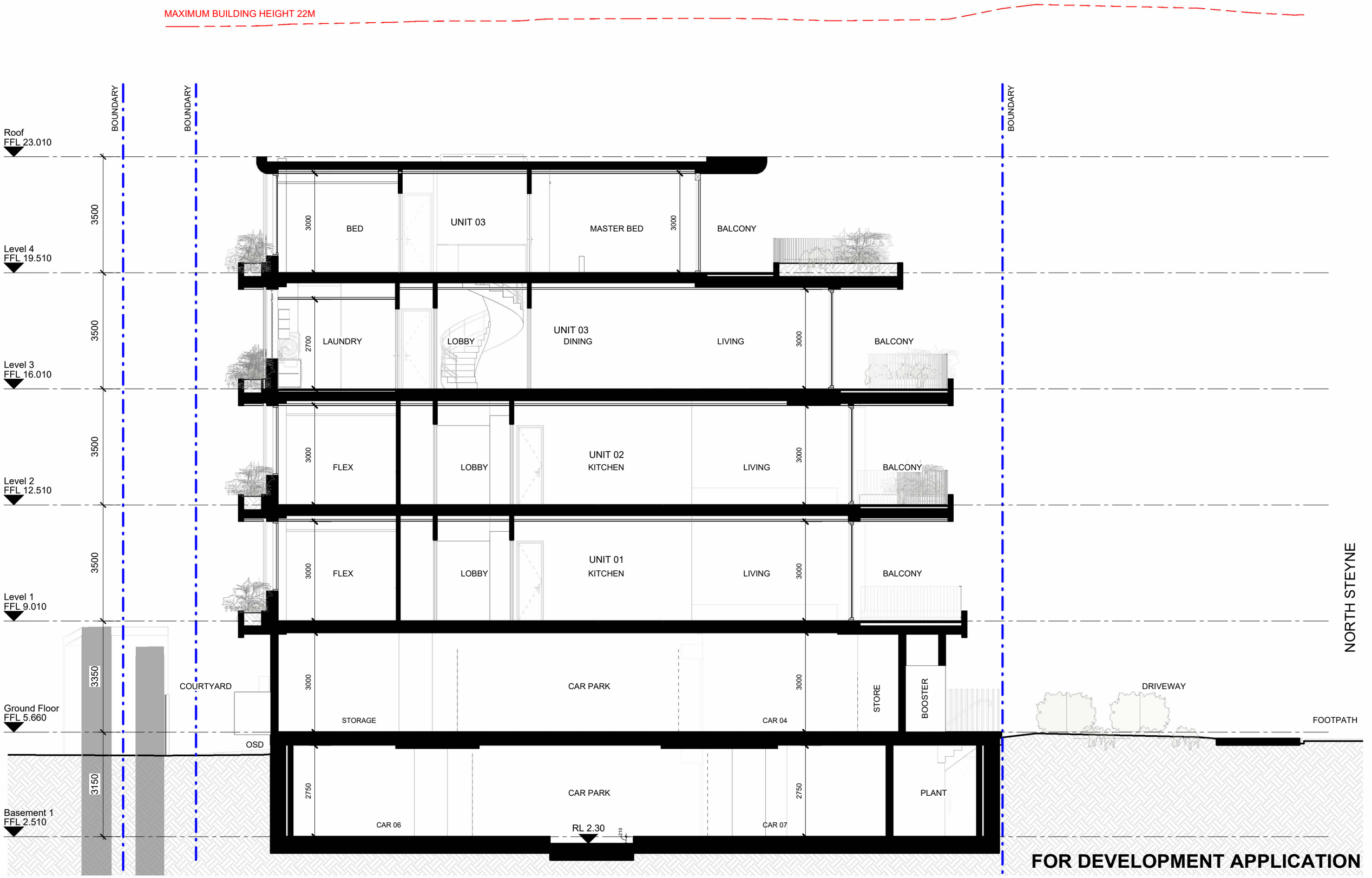

FOR DEVELOPMENT APPLICATION

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REVISION	DATE	DESCRIPTION	BY
DA1	17/04/25	DA SUBMISSION	DN/EDC

REVISION NOTES

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Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: Sections AA

PROJECT: NSM2

SCALE	STATUS	NUMBER	REVISION
1 : 100	DA	DA3000	DA1

FOR DEVELOPMENT APPLICATION

IMPORTANT NOTES:
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REVISION	DATE	DESCRIPTION	BY
DA1	17/04/25	DA SUBMISSION	DN/EDC

REVISION NOTES

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Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE
Sections BB

PROJECT
NSM2

SCALE	STATUS	NUMBER	REVISION
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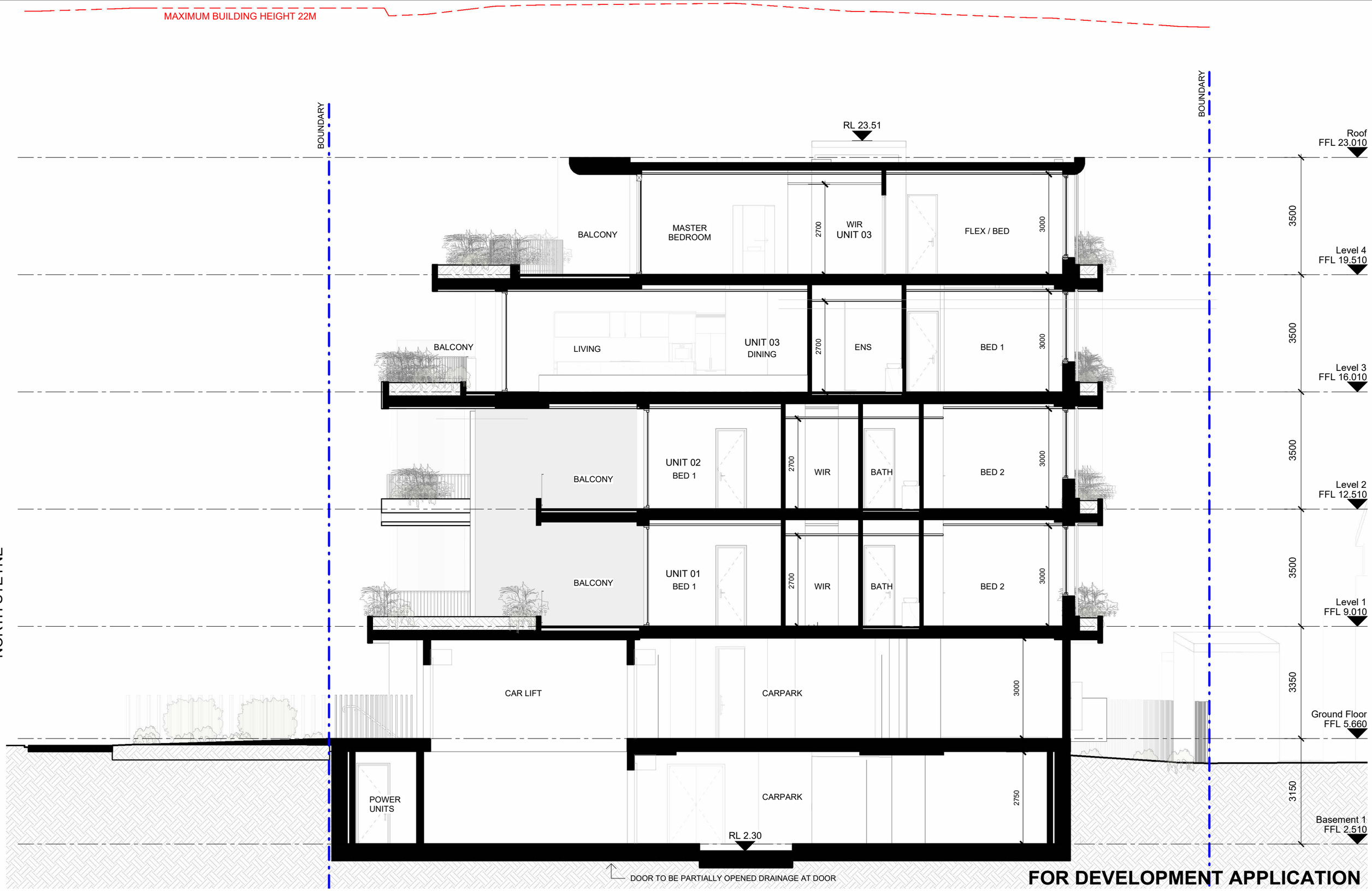

FOR DEVELOPMENT APPLICATION

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REVISION	DATE	DESCRIPTION	BY
DA1	17/04/25	DA SUBMISSION	DN/EDC

REVISION NOTES

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Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

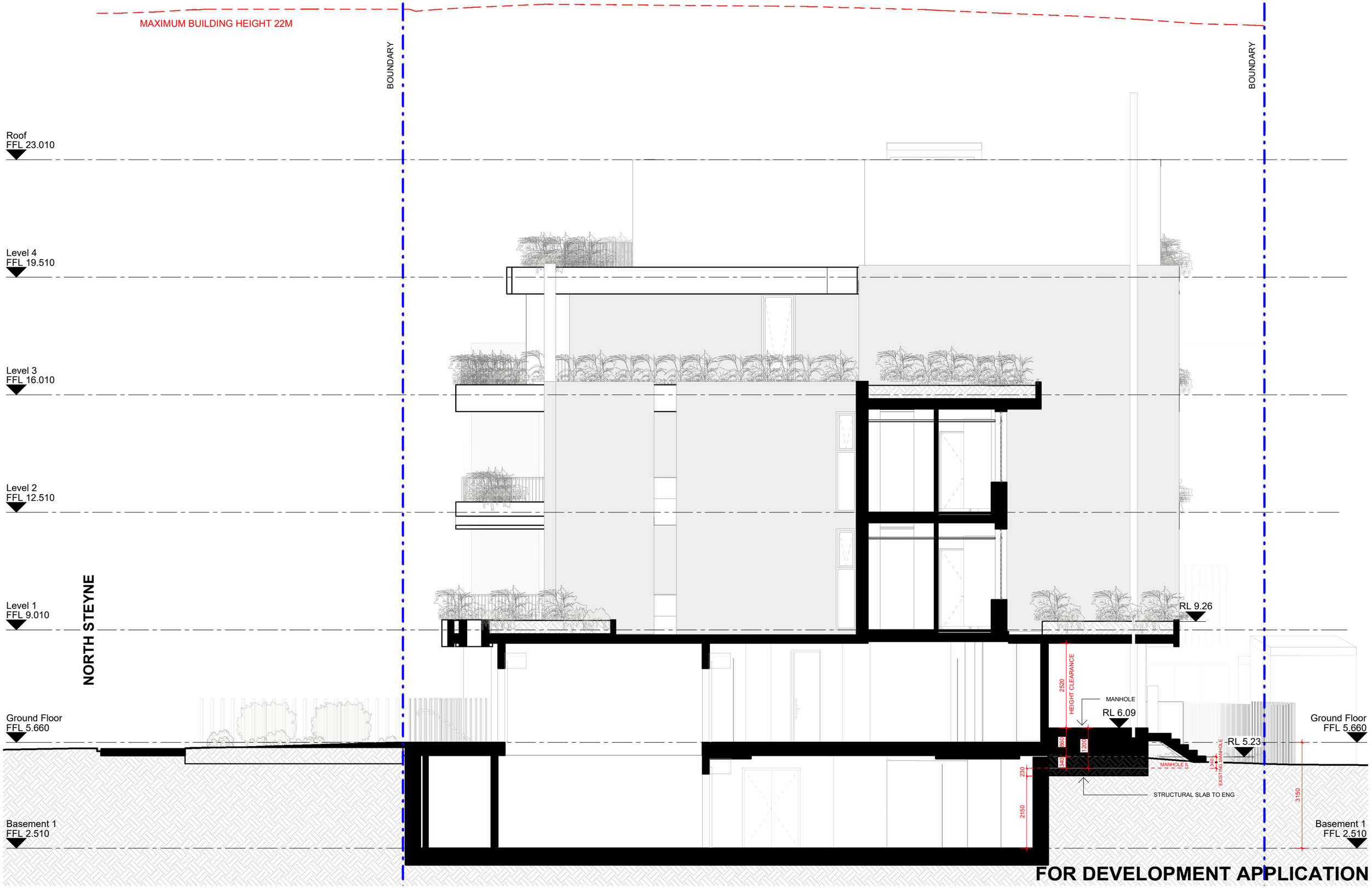
92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: Sections CC

PROJECT: NSM2

SCALE	STATUS	NUMBER	REVISION
1 : 100	DA	DA3002	DA1



FOR DEVELOPMENT APPLICATION

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DA1	17/04/25	DA SUBMISSION	DN/EDC

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Nominated Architect:
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NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

DRAWING TITLE: Sections 1-1

PROJECT: NSM2

SCALE	STATUS	NUMBER	REVISION
1 : 100	DA	DA3003	DA1

DA4000 - Schedule - Windows

WN No.	Width	Height	Sill Height	Count	Comments
Level 1					
W-01	2906	2100	900	1	
W-02	2906	2100	900	1	
W-03	650	1800	900	1	
W-03b	650	300	2700	1	VENTILATION LOUVRES
W-04	600	3000	0	1	DRENCHED
W-05	1600	3000	0	1	
W-06	7500	3000	0	1	
W-07	900	3000	0	1	
W-08	900	2700	0	1	
W-08b	900	300	2700	1	VENTILATION LOUVRES
Level 1: 10					
Level 2					
W-01	2906	2100	900	1	
W-02	2906	2100	900	1	
W-03	650	1800	900	1	
W-03b	650	300	2700	1	VENTILATION LOUVRES
W-04	600	3000	0	1	DRENCHED
W-05	1600	3000	0	1	
W-06	7500	3000	0	1	
W-07	900	3000	0	1	
W-08	900	2700	0	1	
W-08b	900	300	2700	1	VENTILATION LOUVRES
Level 2: 10					

DA4000 - Schedule - Windows

WN No.	Width	Height	Sill Height	Count	Comments
Level 3					
W-01	750	1800	900	1	
W-01b	750	300	2700	1	VENTILATION LOUVRES
W-02	2906	2100	900	1	
W-03	670	1500	1200	1	
W-03b	670	300	2700	1	VENTILATION LOUVRES
W-04	1000	2700	-800	1	
W-05	8450	3000	0	1	
W-06	900	2700	0	1	
W-06b	900	300	2700	1	VENTILATION LOUVRES
Level 3: 9					
Level 4					
W-01	2906	2500	500	1	
W-02	750	2200	500	1	
W-02b	750	300	2700	1	VENTILATION LOUVRES
W-03	2906	2500	500	1	
W-04	5800	3000	0	1	
W-05	925	2750	0	1	
W-05	925	2750	0	1	
W-05b	925	300	2700	1	VENTILATION LOUVRES
W-05b	925	300	2700	1	VENTILATION LOUVRES
Level 4: 9					
Roof					
W-01	1500	1000		1	SKYLIGHT
Roof: 1					
Grand total: 39					

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REVISION	DATE	DESCRIPTION	BY
DA1	17/04/25	DA SUBMISSION	DN/EDC

REVISION NOTES

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Manly, NSW 2095 Australia
Phone: 02 8385 9759

Nominated Architect:
Bridie Gough 8280

NSM2

92 NORTH STEYNE, MANLY

Sargents Developments P/L

FOR DEVELOPMENT APPLICATION

DRAWING TITLE: Window Schedule

PROJECT: NSM2

SCALE	STATUS	NUMBER	REVISION
	DA	DA4000	DA1

APPENDIX 2

NOTES:

1. THIS PLAN IS BASED ON THE ARCHITECTURAL PLANS PREPARED BY PLATFORM ARCHITECTS AND AERIAL IMAGERY SOURCED FROM NEARMAP (IMAGE DATE 07/12/2023)
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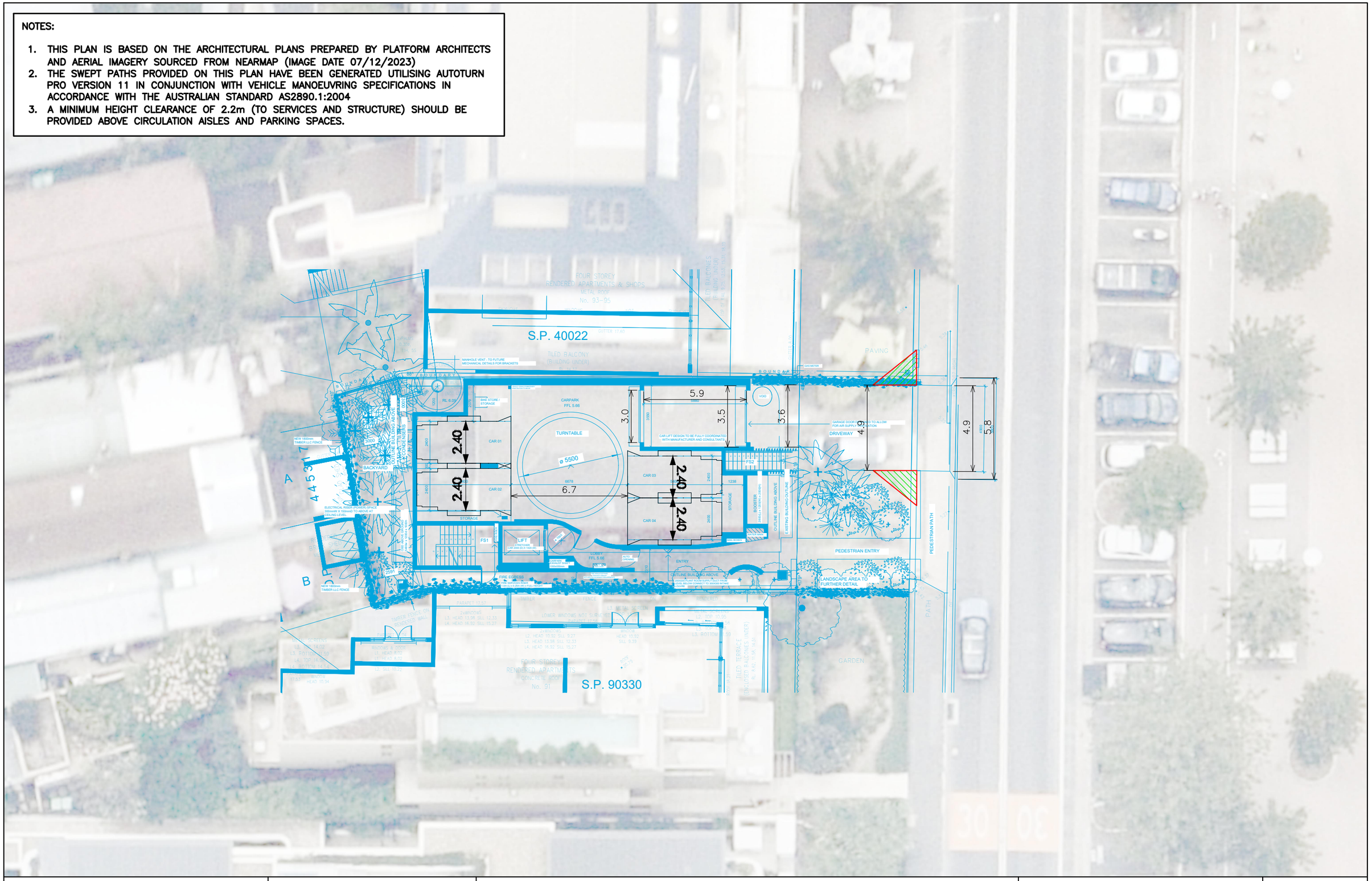
3. A MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) SHOULD BE PROVIDED ABOVE CIRCULATION AISLES AND PARKING SPACES.



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NOTES:

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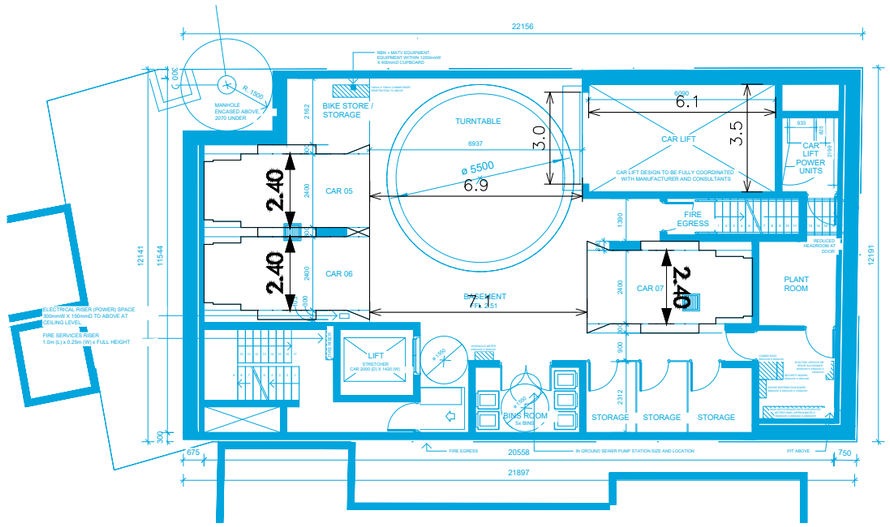

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NOTES:

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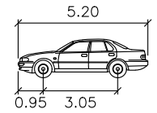
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B99

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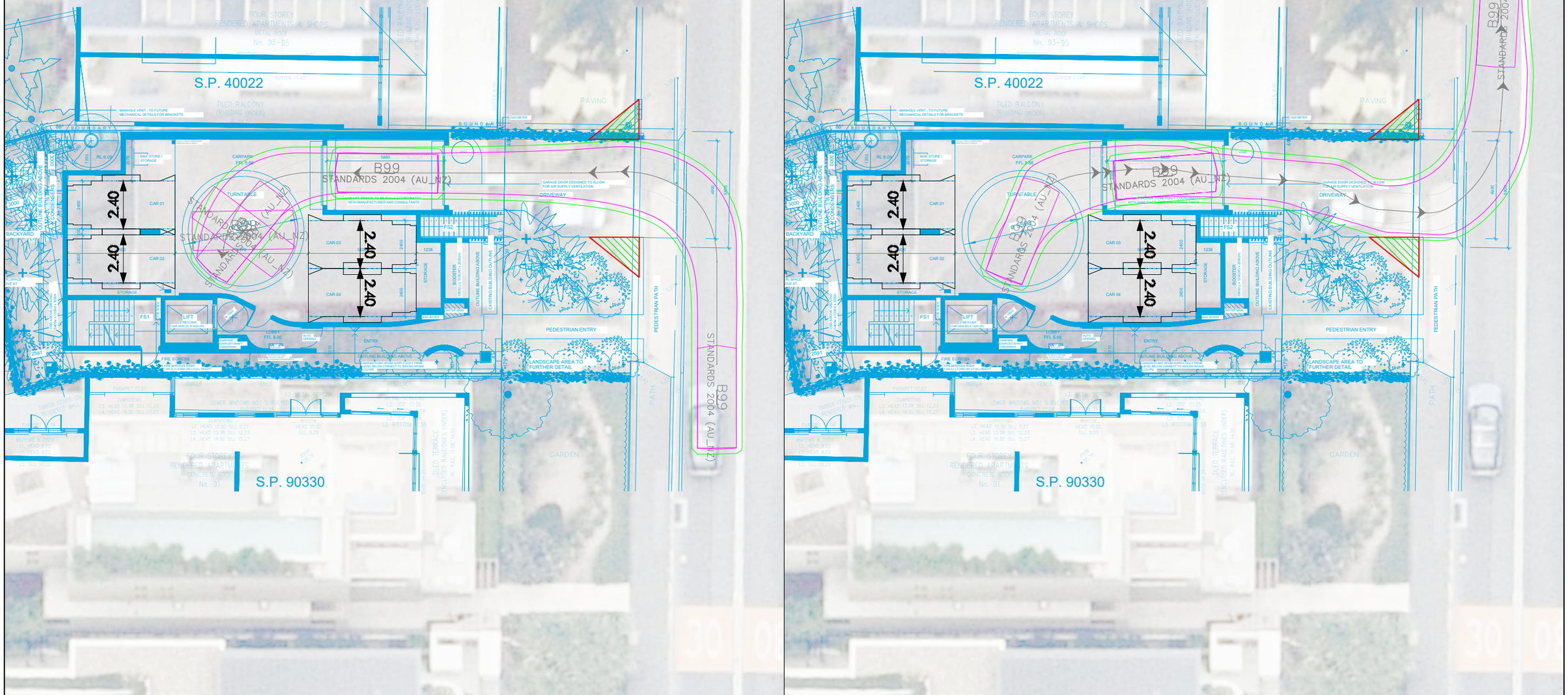

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NOTES:

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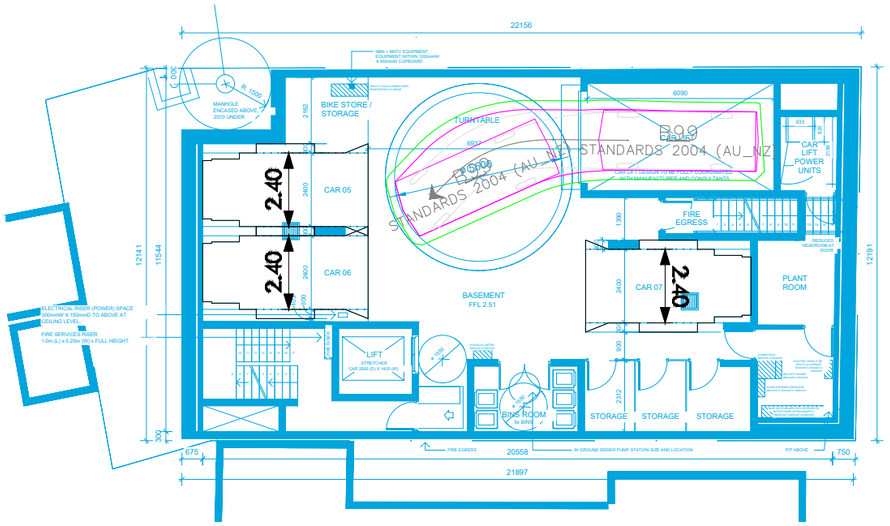
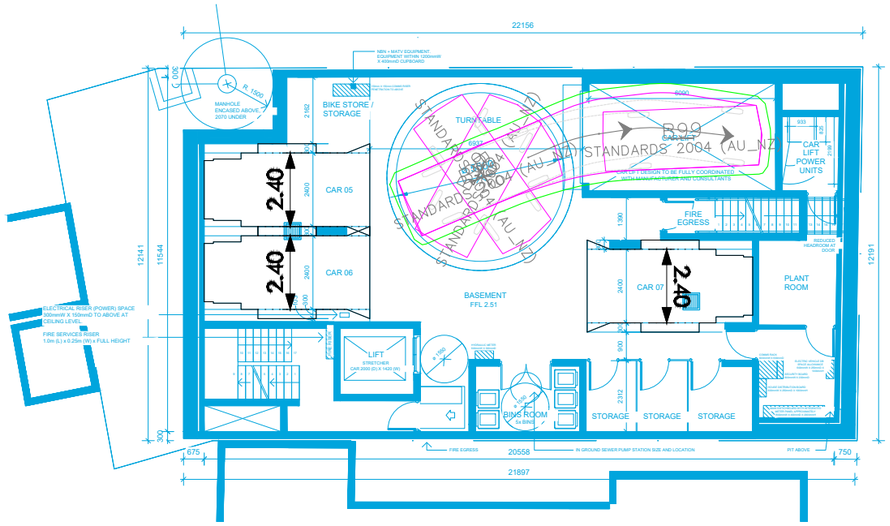
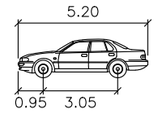




SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



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Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

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STANBURY TRAFFIC PLANNING

92 NORTH STEYNE, MANLY
CAR PARK COMPLIANCE REVIEW
BASEMENT
SWEPT PATH ASSESSMENT

SCALE 0 2.0 4.0	1:200@A3	CREATED BY X.D
DRAWING NO.	24-103-06-V5	APPROVED BY M.S
DATE	29 April 2025	SHEET 04 / 11

NOTES:

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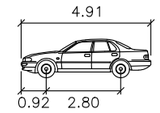
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



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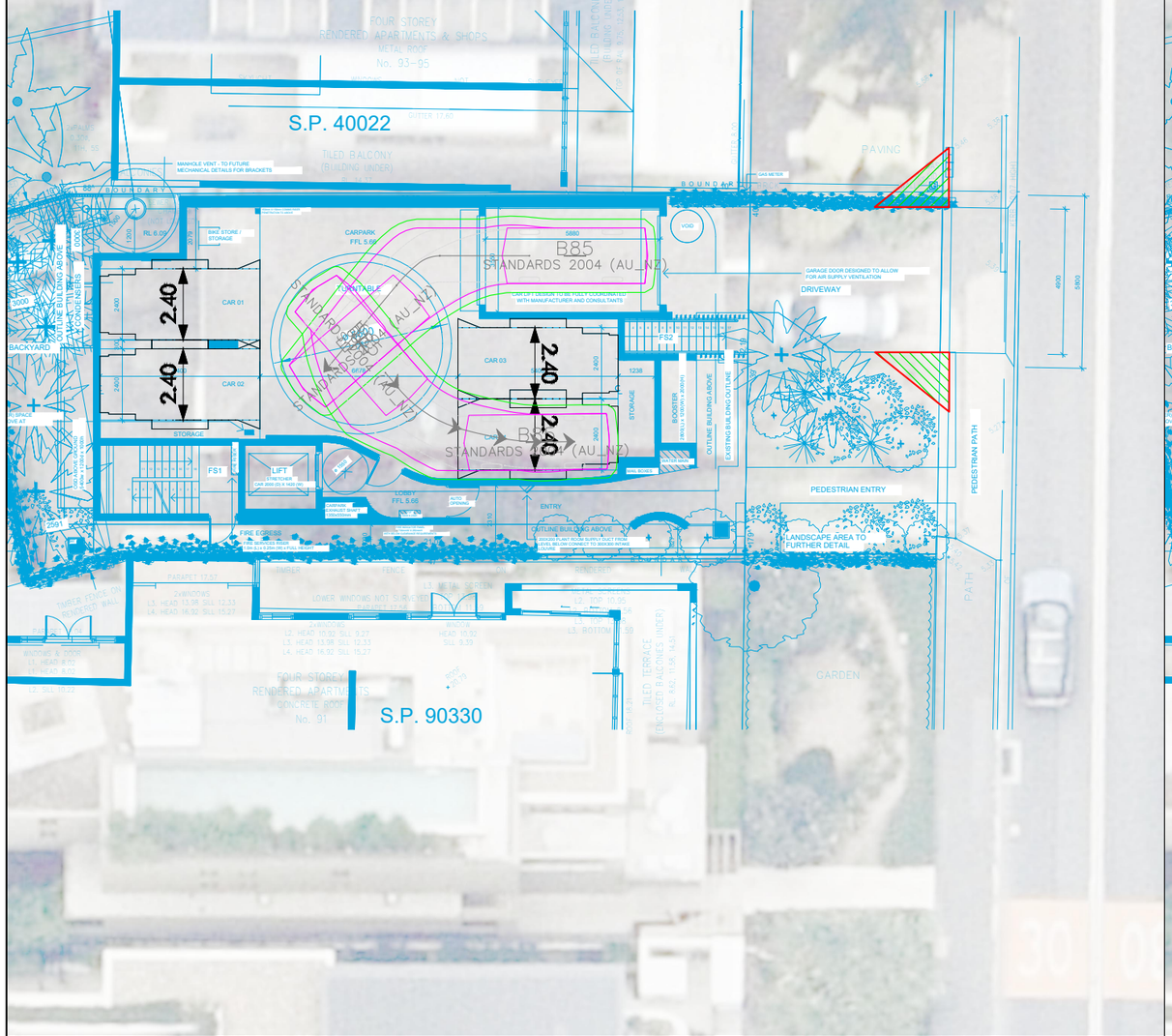

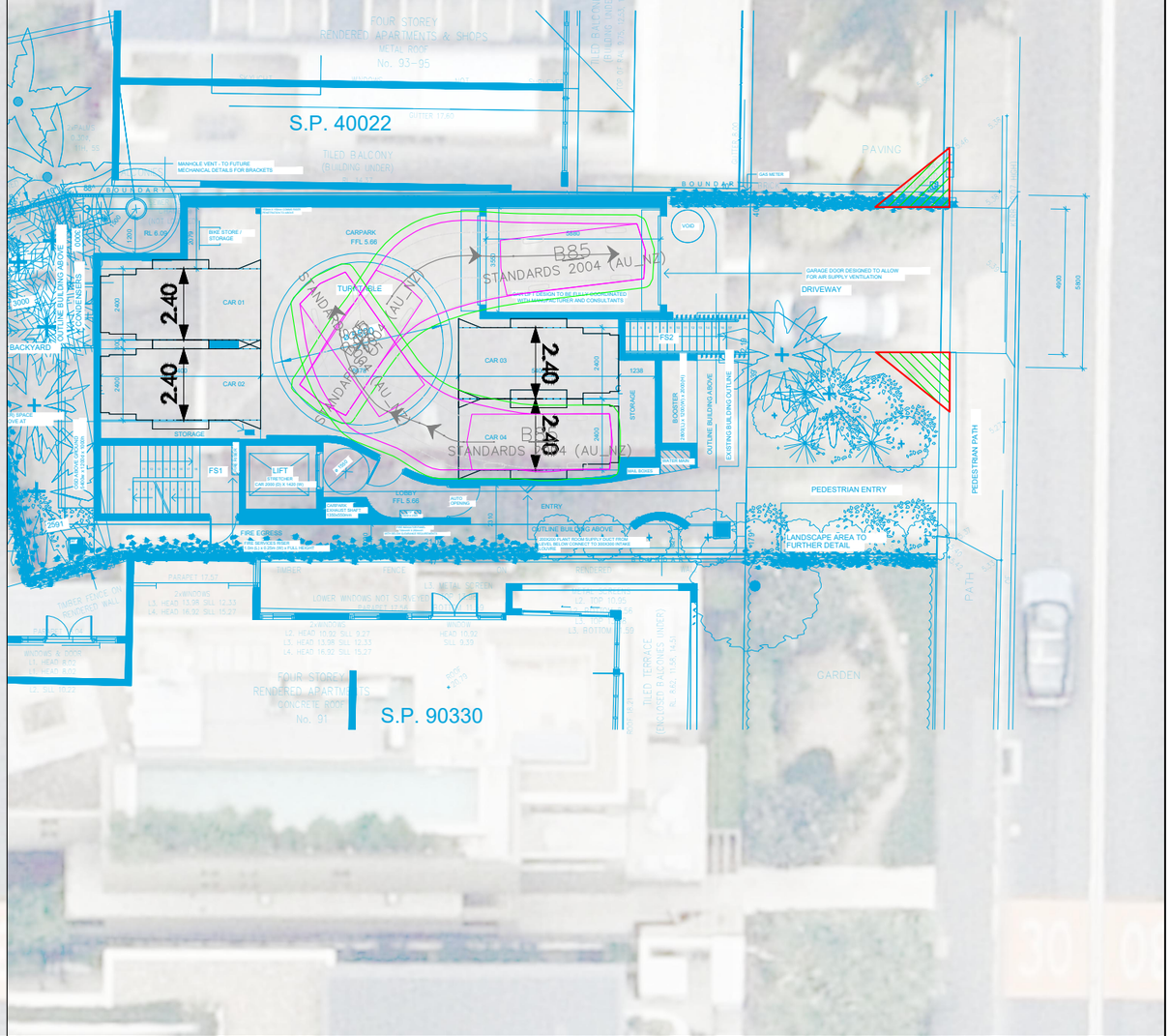

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STANBURY TRAFFIC PLANNING

92 NORTH STEYNE, MANLY
CAR PARK COMPLIANCE REVIEW
GROUND
SWEPT PATH ASSESSMENT

SCALE	0 2.0 4.0 1:200@A3	CREATED BY X.D
DRAWING NO.	24-103-06-V5	APPROVED BY M.S
DATE	29 April 2025	SHEET 05 / 11

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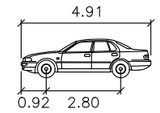

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Lock to Lock Time	: 6.0
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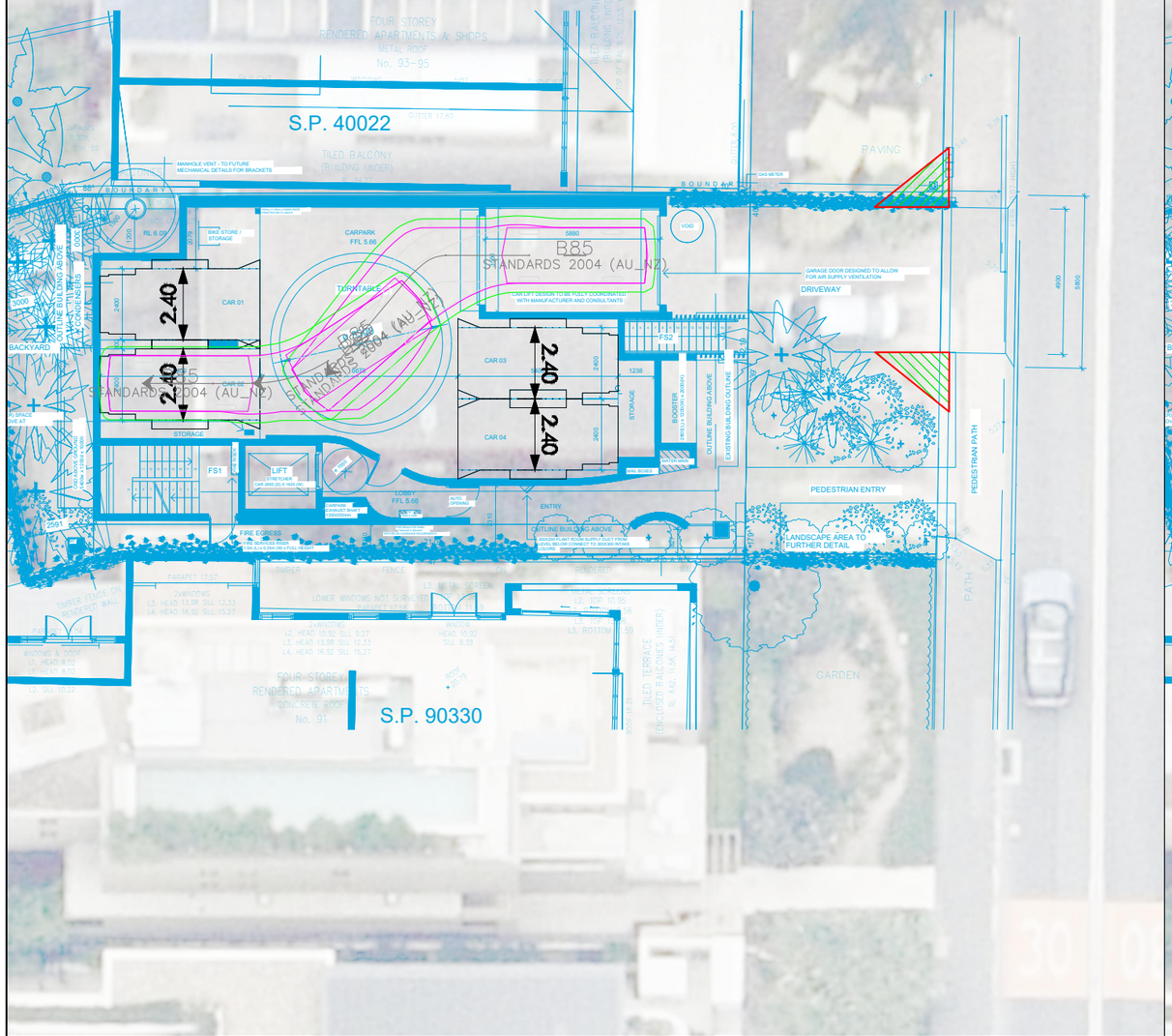

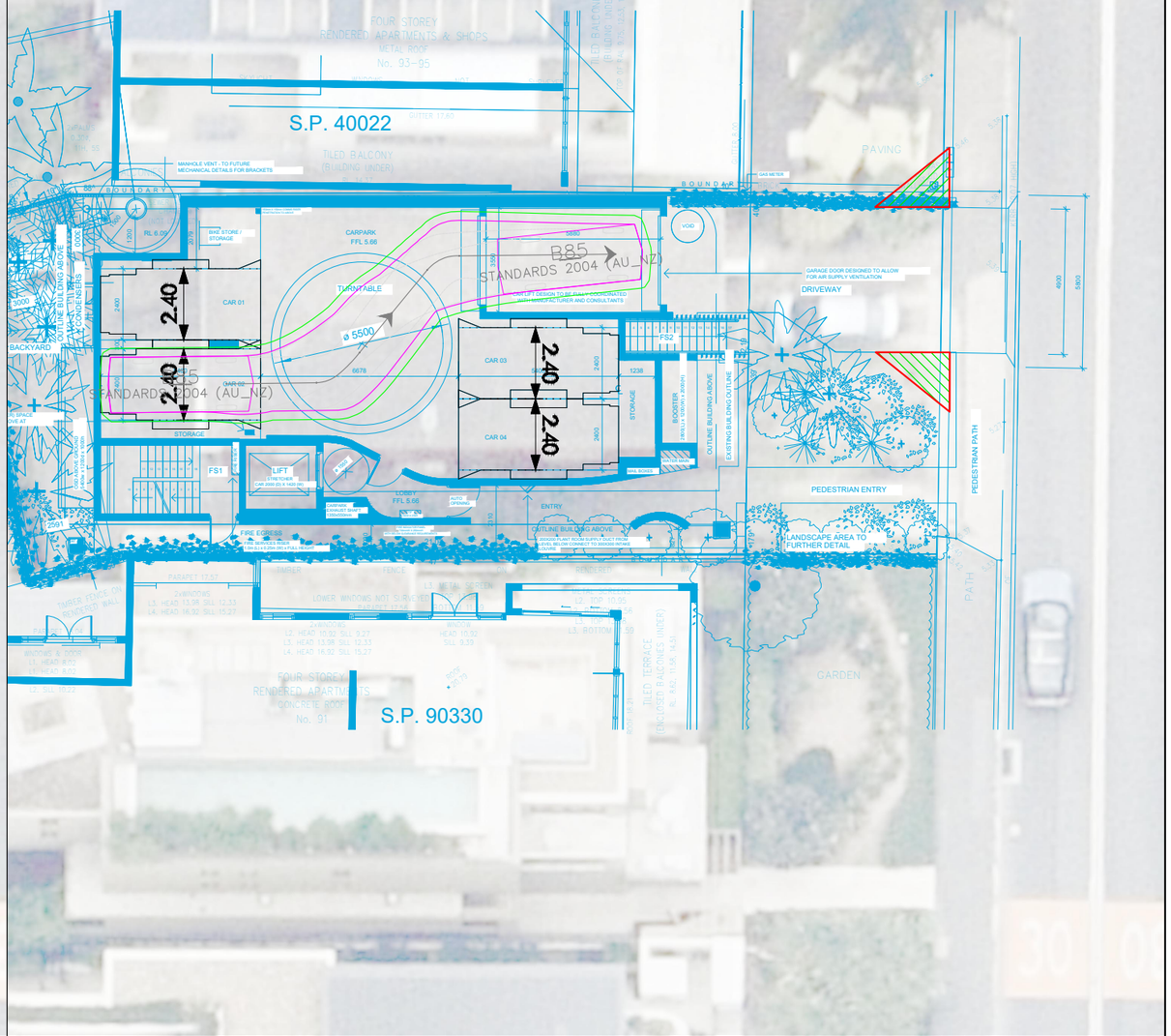

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STANBURY TRAFFIC PLANNING

92 NORTH STEYNE, MANLY
CAR PARK COMPLIANCE REVIEW
GROUND
SWEPT PATH ASSESSMENT

SCALE	0 2.0 4.0 1:200@A3	CREATED BY X.D
DRAWING NO.	24-103-06-V5	APPROVED BY M.S
DATE	29 April 2025	SHEET 06 / 11

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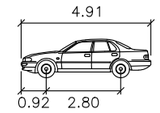
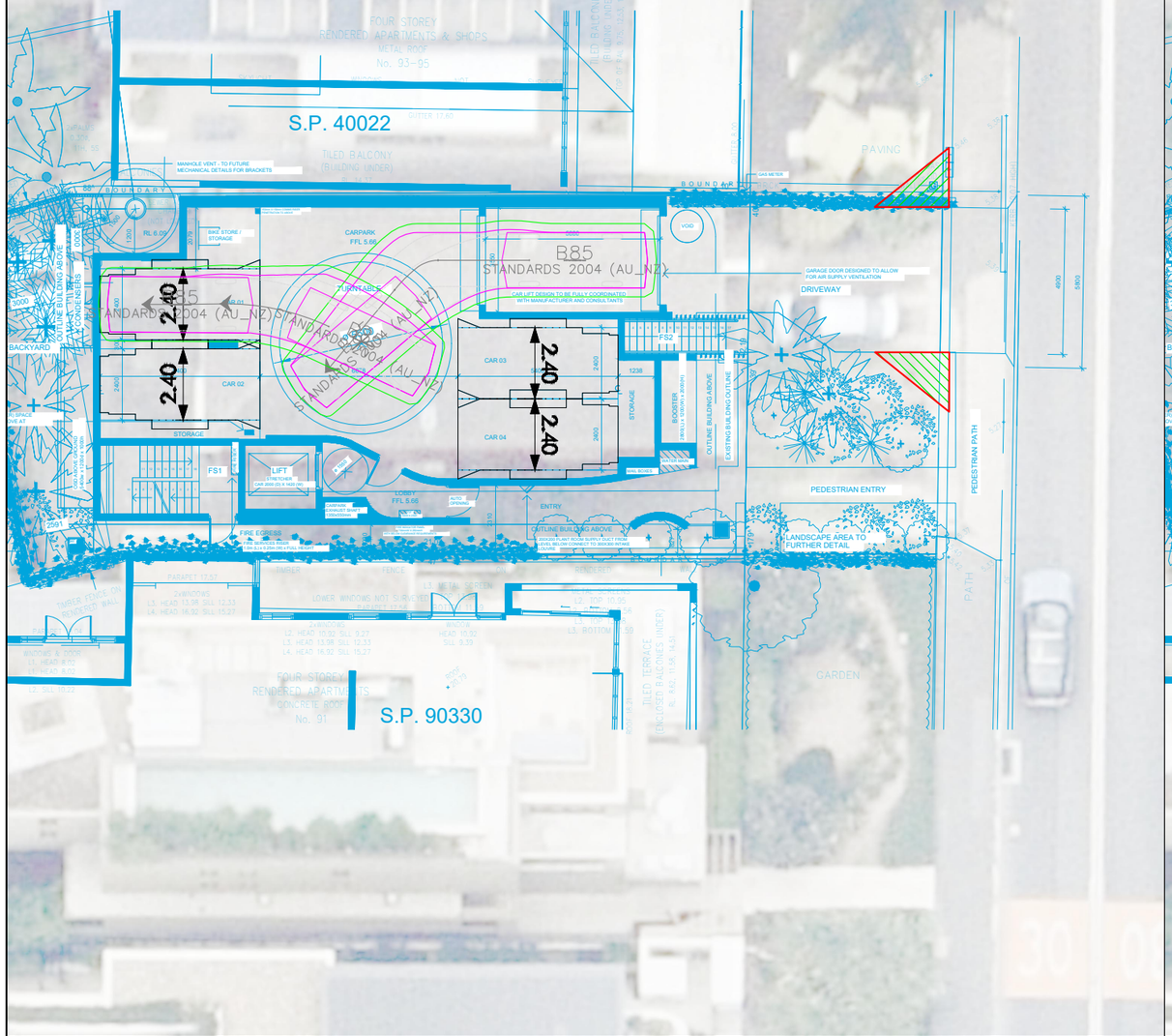
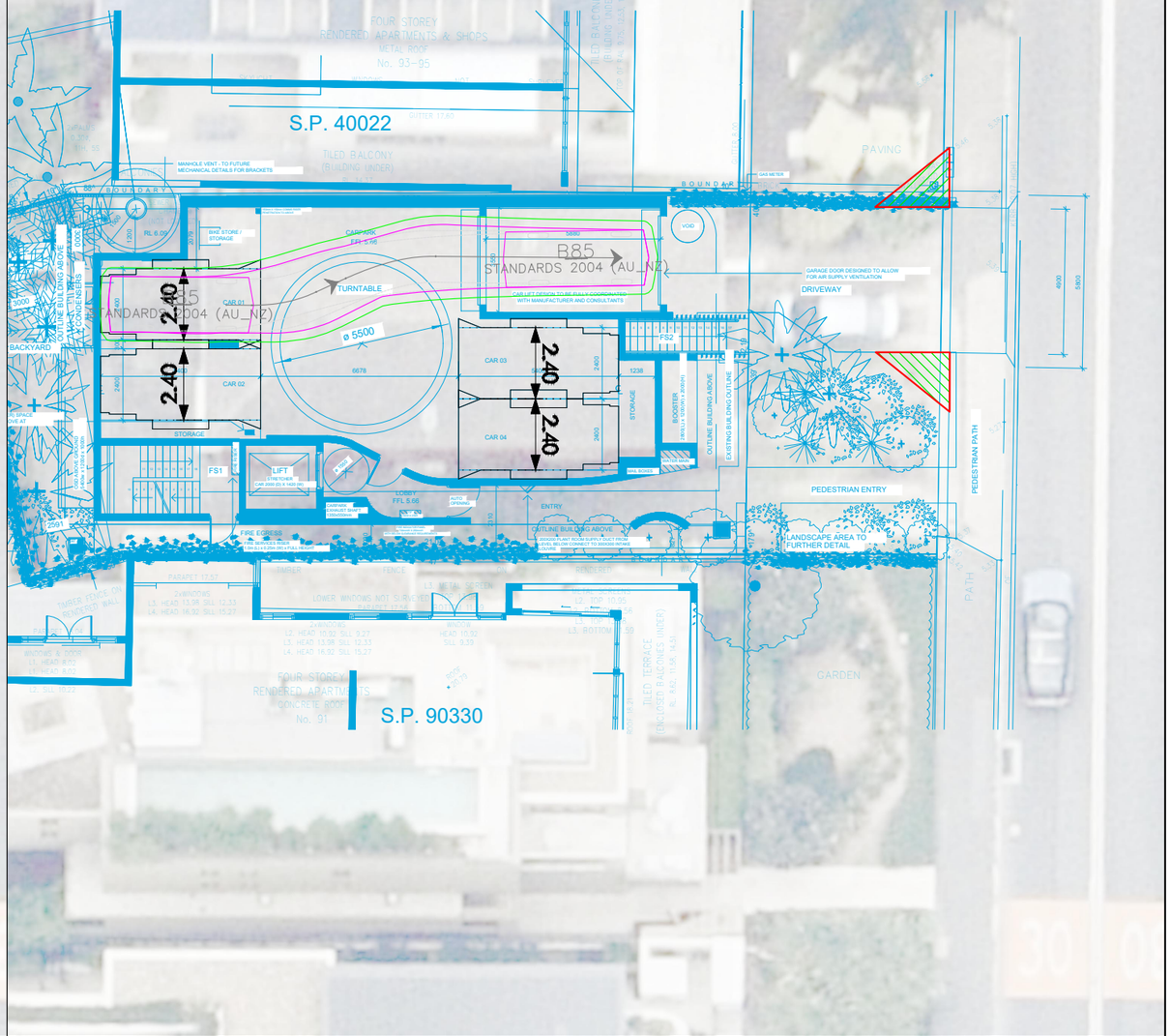


B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1





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TRAFFIC, PARKING & TRANSPORT CONSULTANTS

ADDRESS: 401/380 HARRIS ST, PYRMONT
PH: (02) 8971 8314
EMAIL: info@stanburytraffic.com.au
WEBSITE: www.stanburytraffic.com.au

STANBURY TRAFFIC PLANNING

92 NORTH STEYNE, MANLY
CAR PARK COMPLIANCE REVIEW
GROUND
SWEPT PATH ASSESSMENT

SCALE	0 2.0 4.0 1:200@A3	CREATED BY X.D
DRAWING NO.	24-103-06-V5	APPROVED BY M.S
DATE	29 April 2025	SHEET 07 / 11

NOTES:

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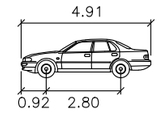
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

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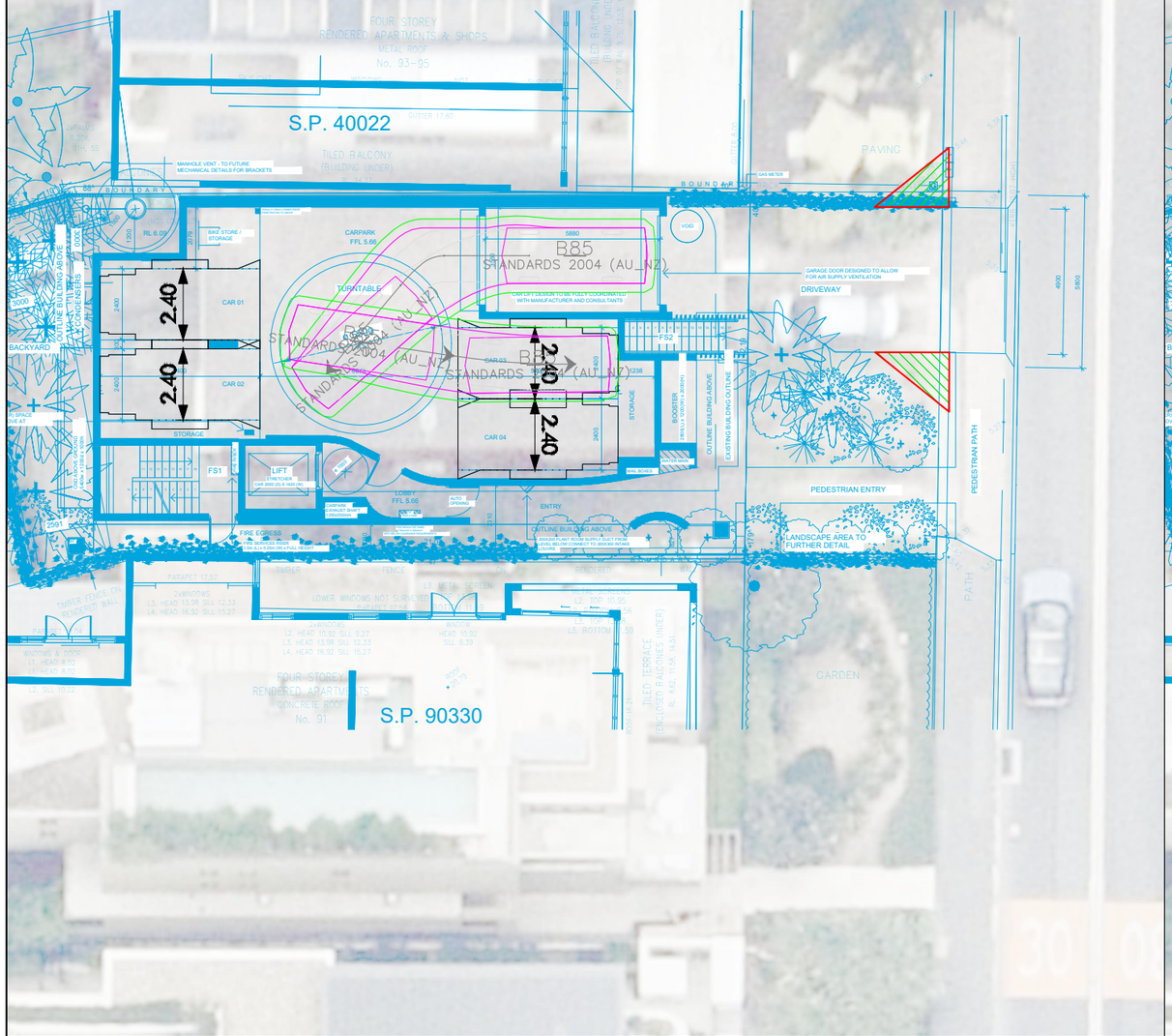

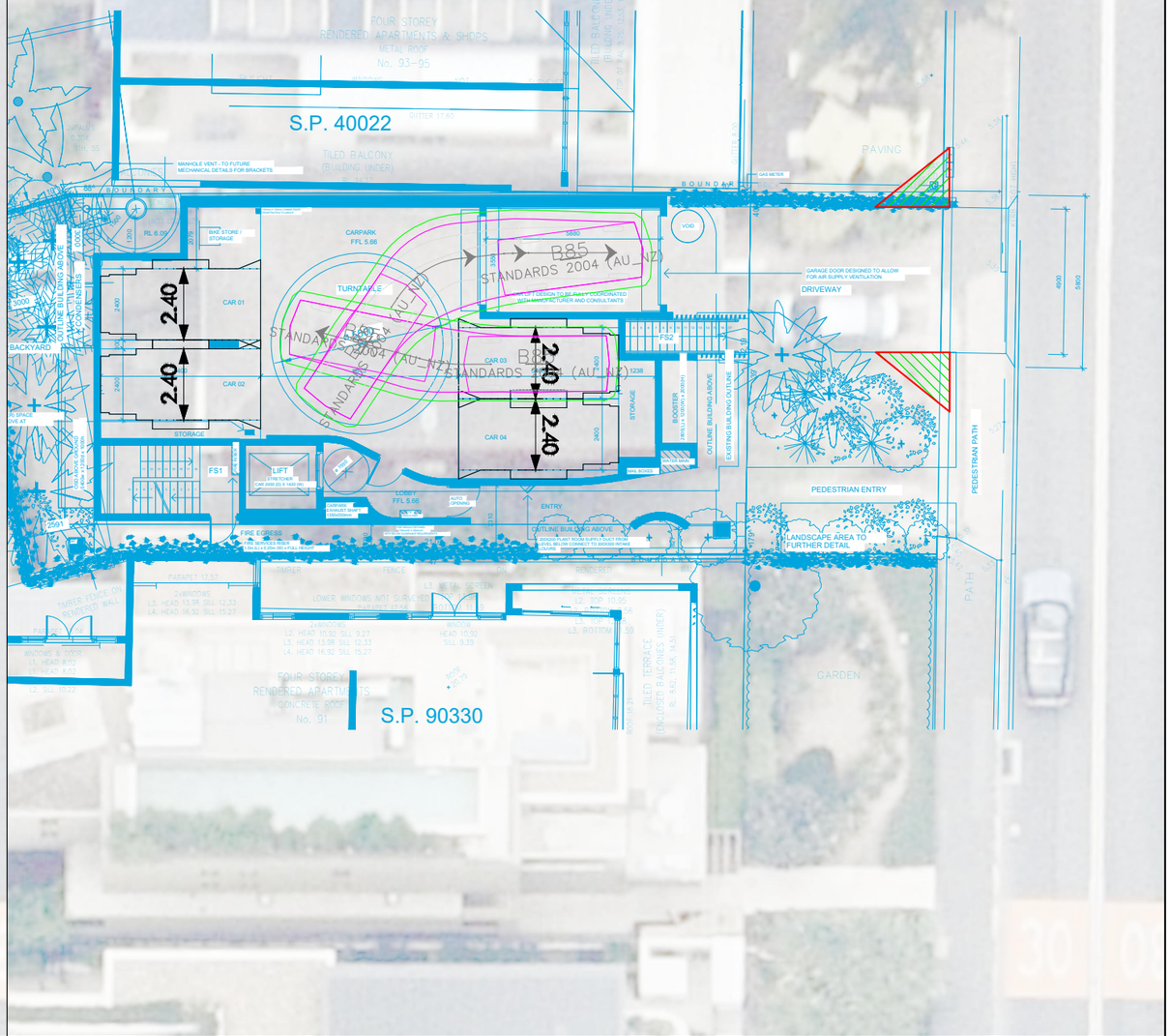

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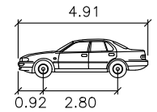

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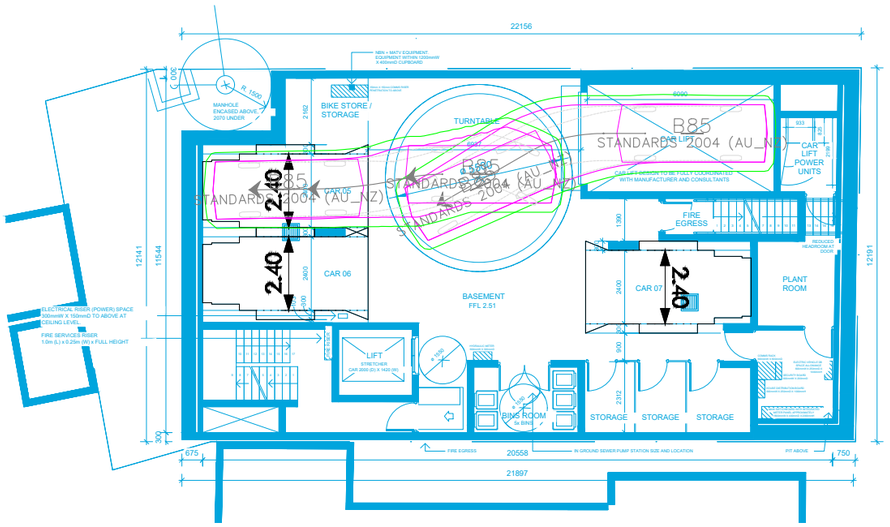

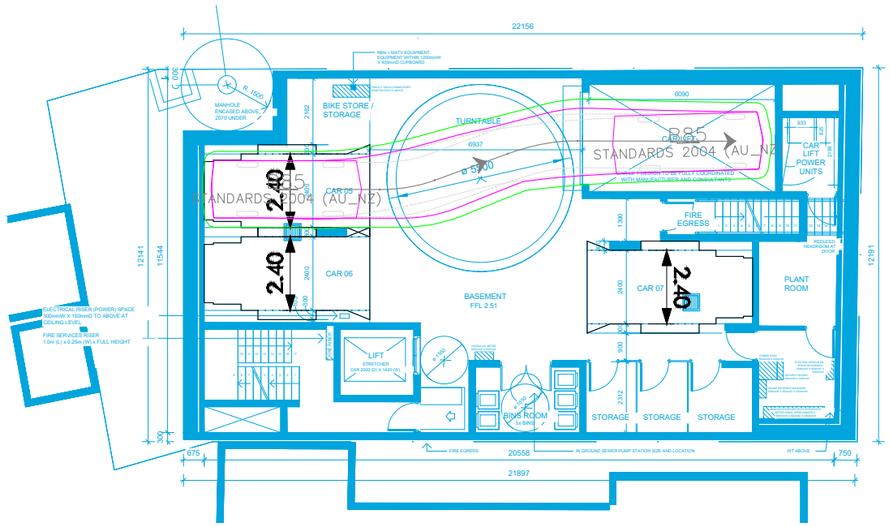

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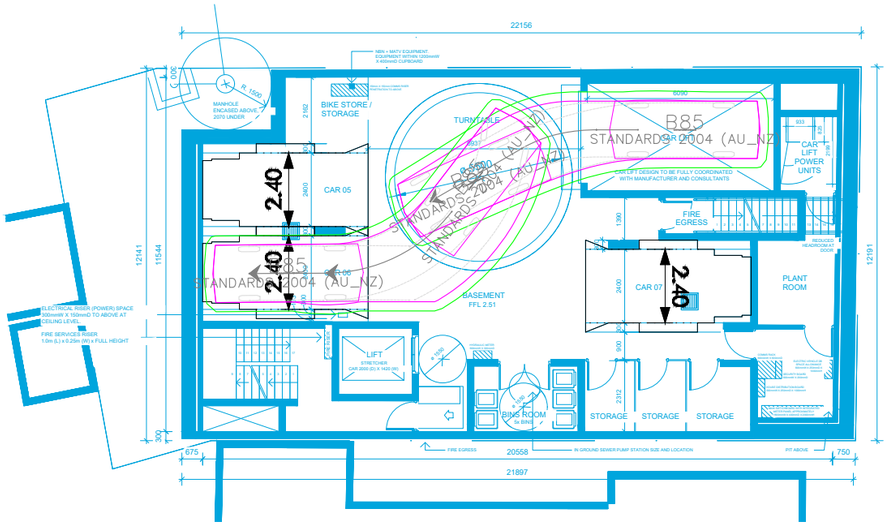

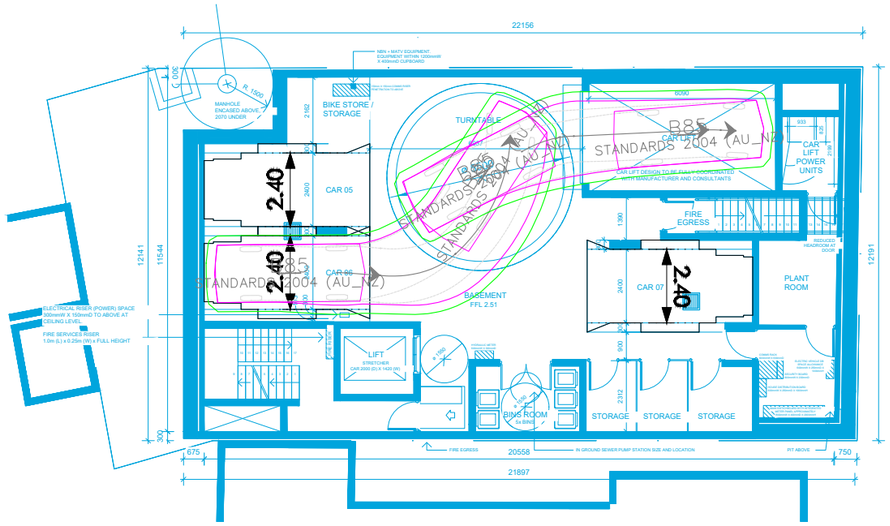

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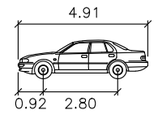

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92 NORTH STEYNE, MANLY
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SCALE 0 2.0 4.0	1:200@A3	CREATED BY X.D
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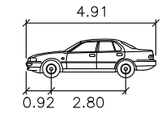

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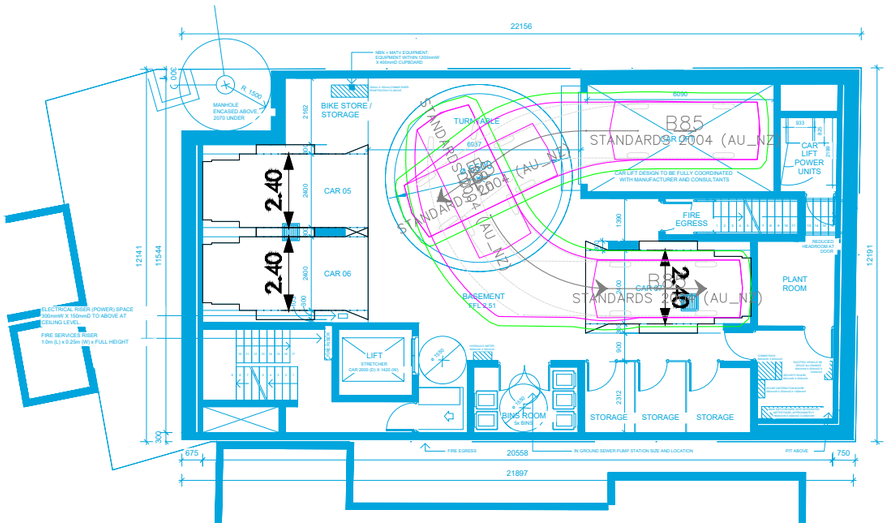

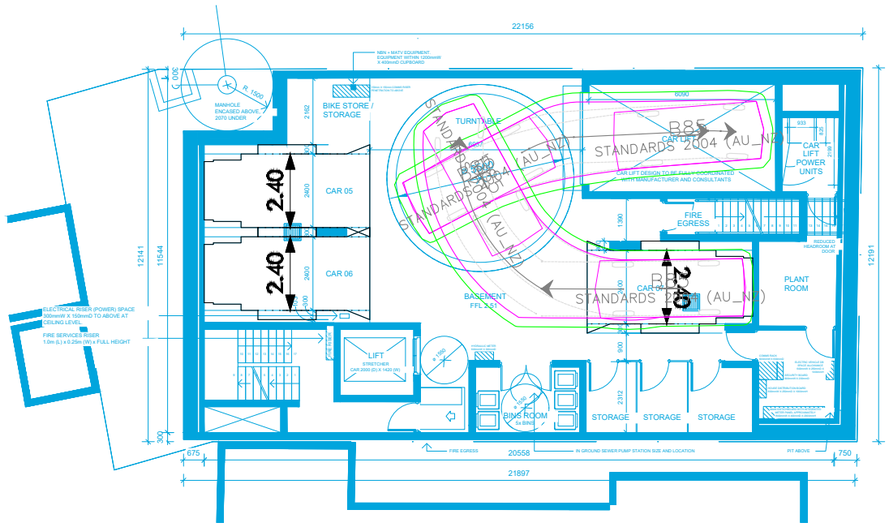

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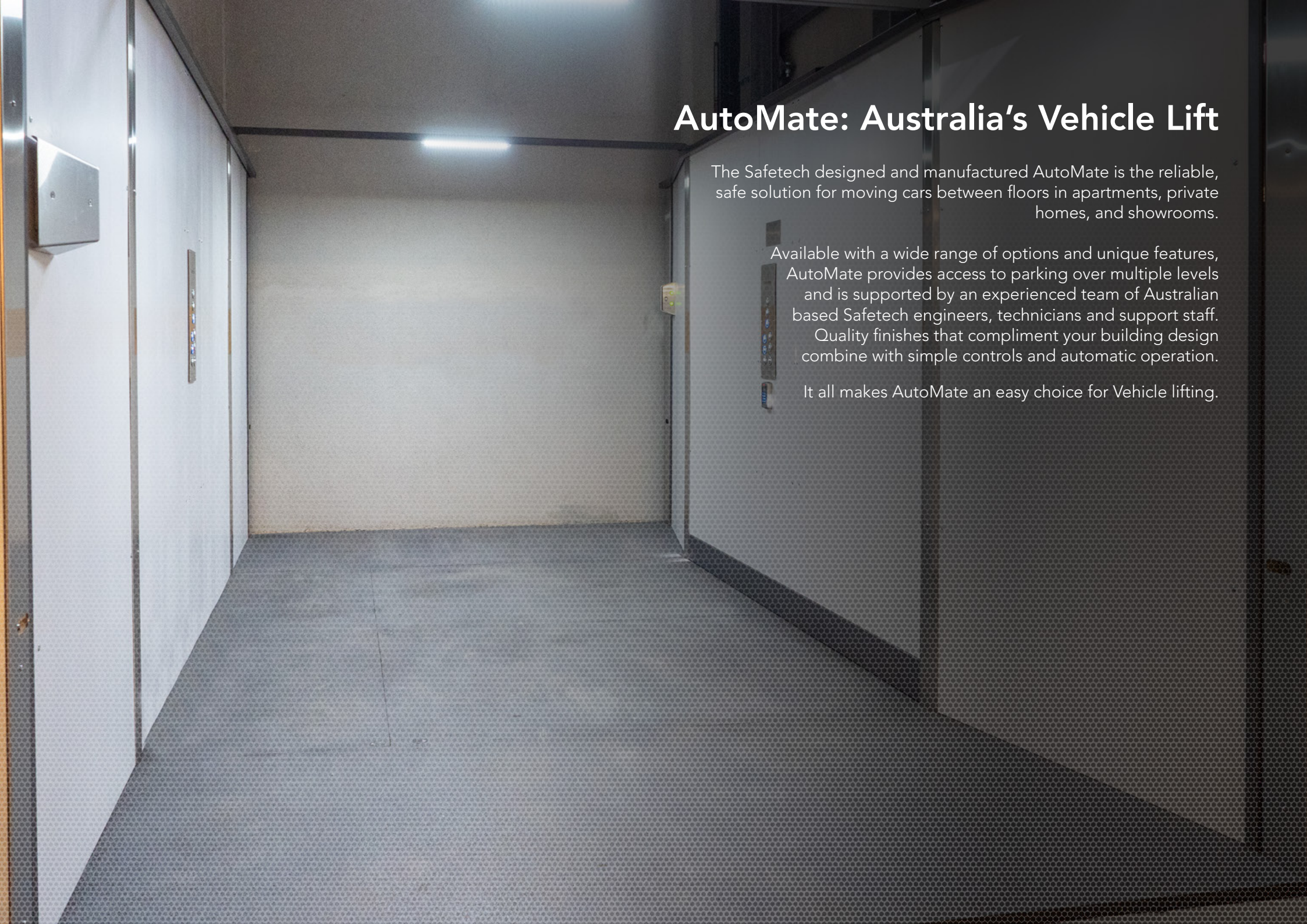
APPENDIX 3


SAFETECH™
Servicing customers across Australia and New Zealand
AutoMate Vehicle Lift
The complete information pack for your lift
SPRINKLER CONTROL VALVE
SAFETECH
V1.0 - 30.3.23
safetech.com.au



AutoMate: Australia's Vehicle Lift

The Safetech designed and manufactured AutoMate is the reliable, safe solution for moving cars between floors in apartments, private homes, and showrooms.

Available with a wide range of options and unique features, AutoMate provides access to parking over multiple levels and is supported by an experienced team of Australian based Safetech engineers, technicians and support staff. Quality finishes that compliment your building design combine with simple controls and automatic operation.

It all makes AutoMate an easy choice for Vehicle lifting.

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Shaft forces 7

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DISCLAIMER:

This document is designed to provide design insight and is not to be used for construction.

Design Intent

The complete information pack for your lift

Making the right decision

Choosing a vehicle lift is one of the most important decisions you will make for your building. The lift should be easy to use, reliable, efficient, safe and add value to the property.

Standardised Australian Design

- Is the car lift locally manufactured and supported?
- Does it comply with Australian mechanical, electrical, hydraulic and controls standards?

A Single Trusted Supplier

- Does the manufacturer make the lift, doors and controls?
- Who do you call? Managing multiple suppliers reduces accountability.

Safety & Security

- Is the lift WorkSafe compliant?
- Can you safely exit in a power outage?
- Any risk of entrapment?
- Can strangers use it to enter the building?

Performance & Reliability

- Check the suppliers history. Ask other customers for a reference.
- Does the lift run smoothly?
- What is the lift cycle time?
  - Including door opening/closing?

Quality Finishes

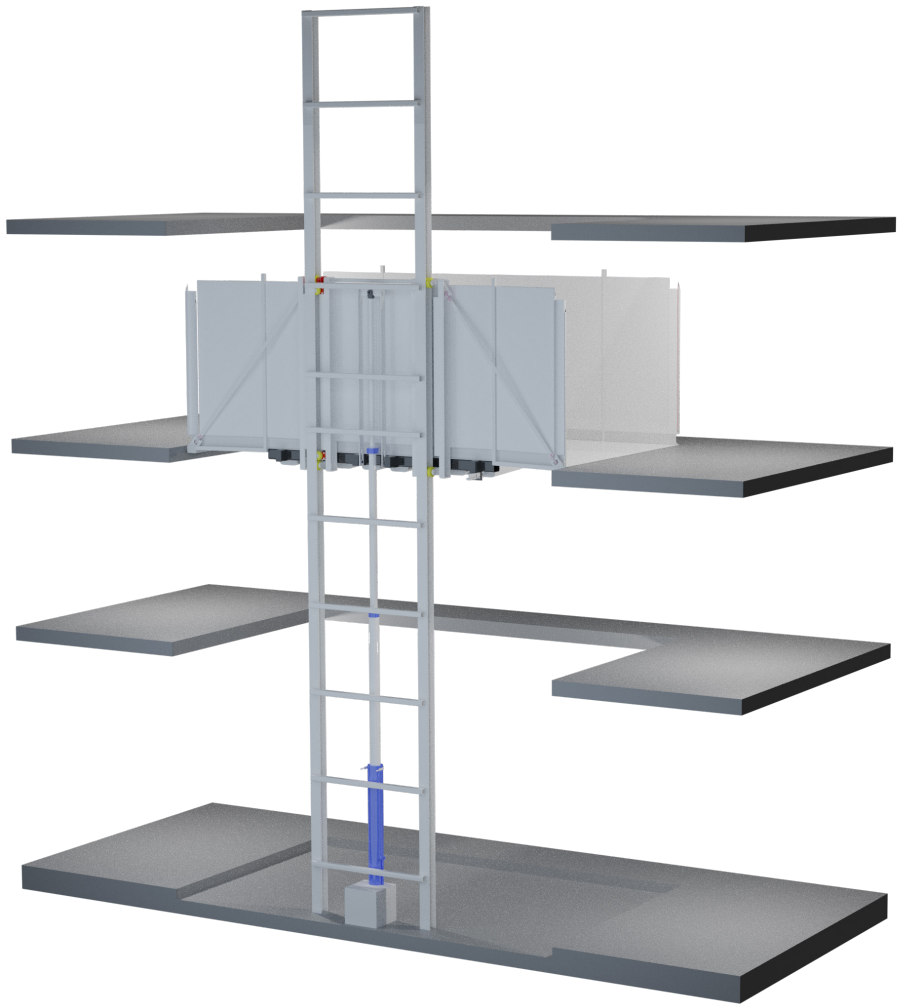
- Does the lift design match the finish of your building?

User Experience

- Are the controls modern and attractive?
- Is it easy to use?
- Can you stay in your car?

Support & Service

- Is 24/7 local support available?
- Are design and controls engineers in Australia or overseas?
- Are parts available locally?



The AutoMate Mechanism

Single mast with cantilevered platform

Critical to the AutoMate design is minimizing the required mechanical space in all dimension, whilst maximizing usable platform and door opening dimensions.

More info

For more information on the full vehicle lift range view the website.

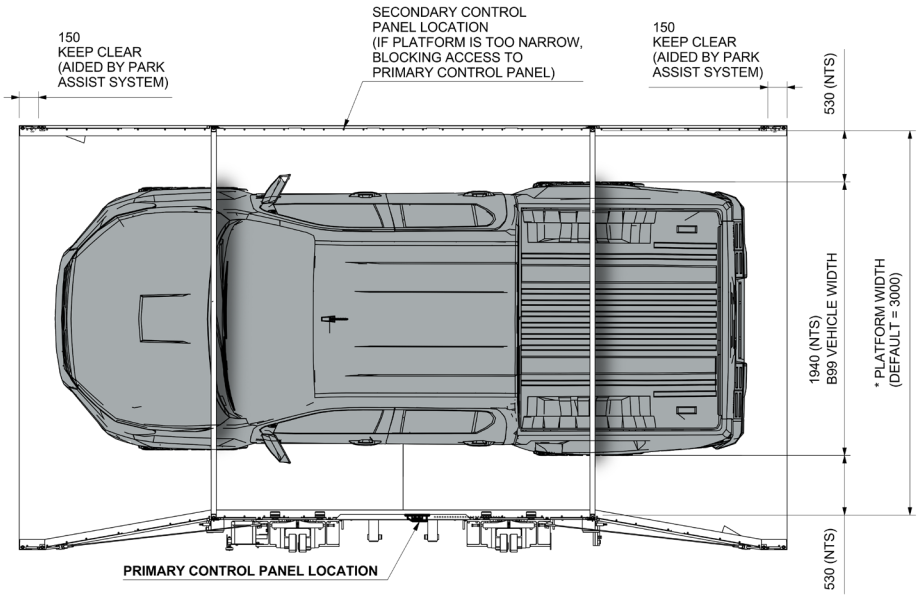
Platform shape

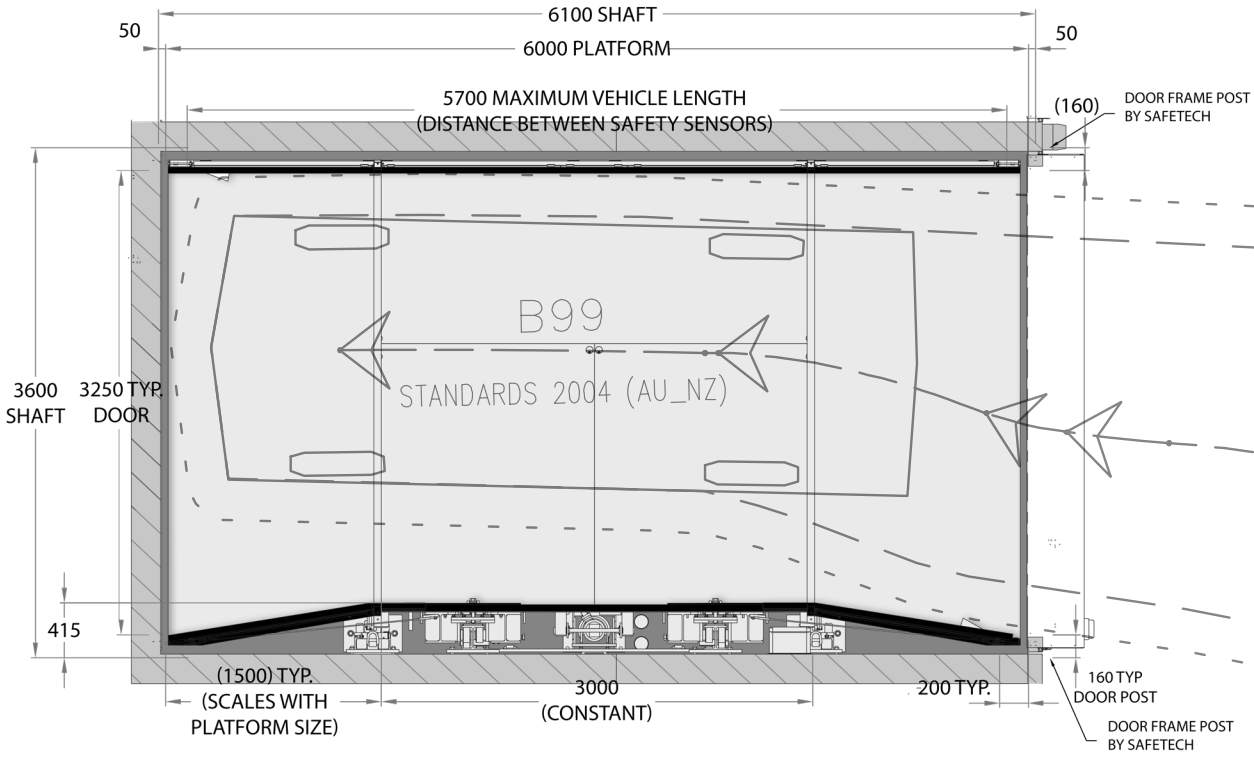
Optimized swept paths, maximized door openings

Our platform design with flared openings maximizes the usable space for a given shaft area.

To accommodate, the lift shaft requires no nibs at the door openings, and should be created with a full width opening.

Safetech would then install a pair of 160mm door frame posts containing door tracks and landing controls.

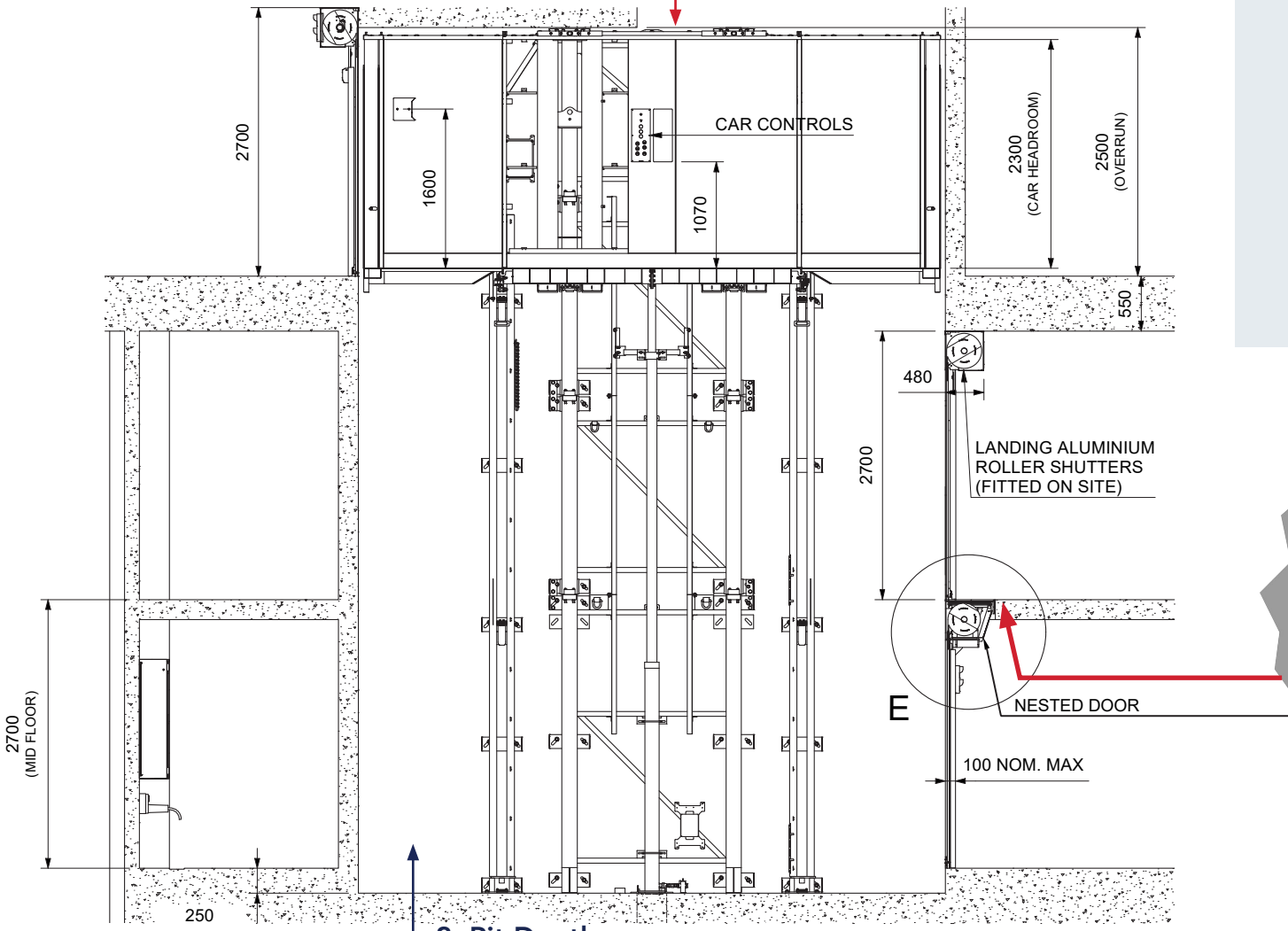




Shaft design highlights

1. Minimised Shaft Overruns

With no mechanism above the booth ceiling we are able to minimize the shaft overrun.



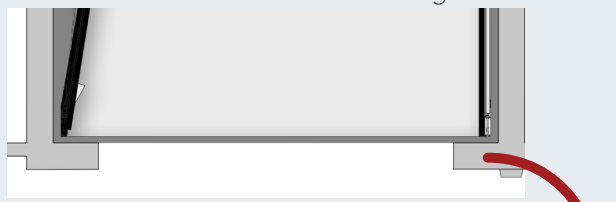
3. Pit Depth

Our optimized 250mm pit depth suits all types of projects including ground to basement levels & ground up installations

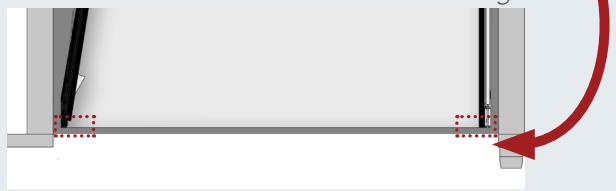
Nib Removal

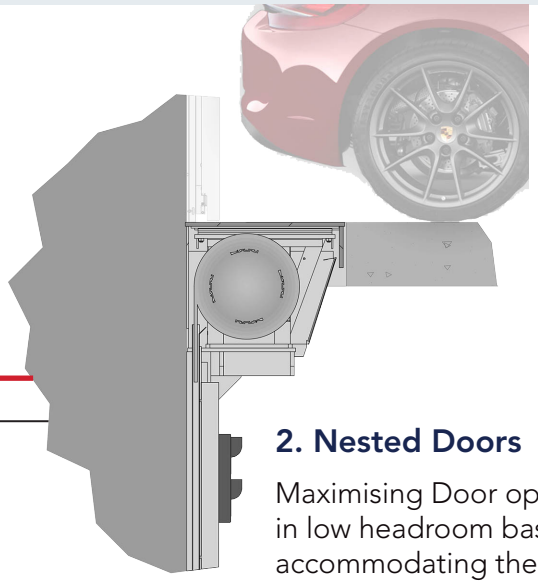
No requirement for builders to create shaft nibs, maximising door opening widths

Standard architectural CAD design block



Safetech shaft design



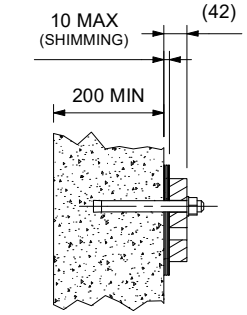


2. Nested Doors

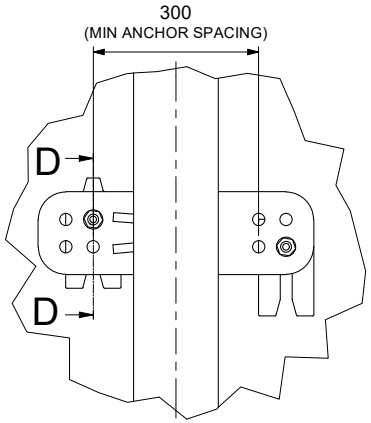
Maximising Door opening heights in low headroom basements, accommodating the door drum within the ceiling space. This approach accommodates the traversing of vehicles on levels above.

Reference our doors section for other door options and approaches.

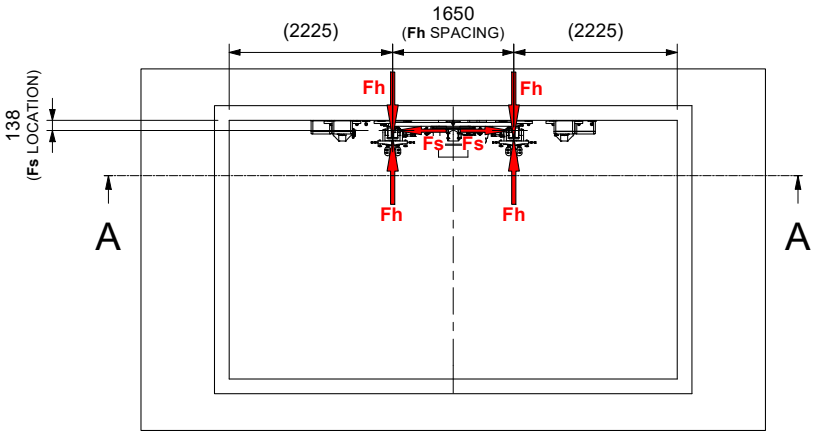
Shaft forces



SECTION D-D
(1 : 10)



DETAIL C
(1 : 10)



PLAN

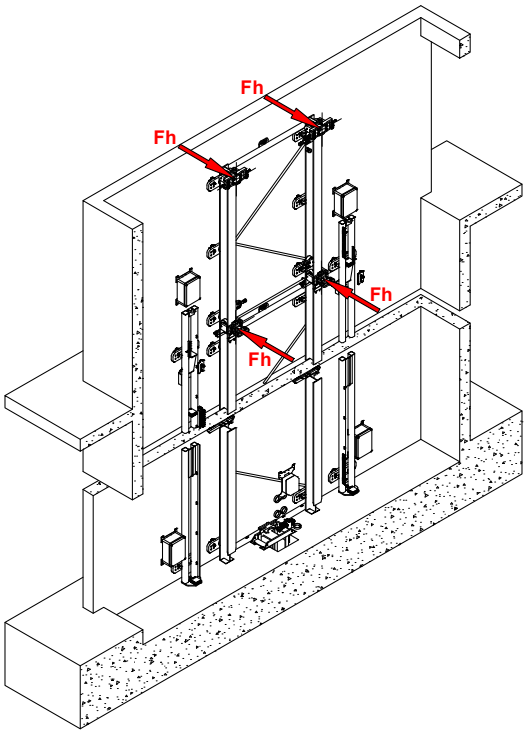
The AutoMate single mast vehicle lift is a compact cantilevered mechanism.

To achieve this design the shaft must be suitably square on all internal surfaces, and withstand the nominated forces to the load bearing wall and pit floor.

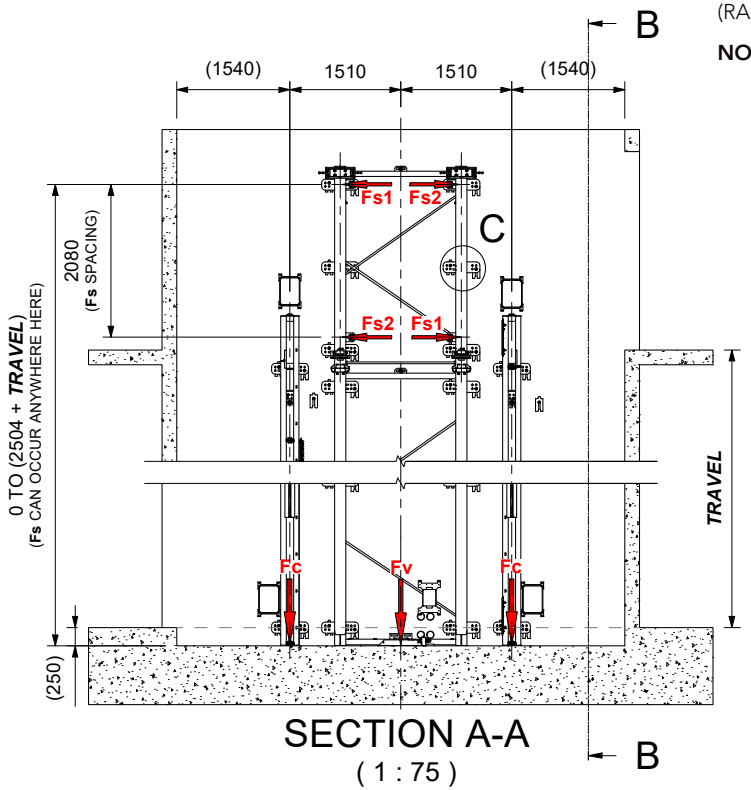
Technical Data

Data here is indicative and generic. Always consult Safetech's project-specific drawings for final for construction details.

Requirements given here are typical of a standard Safetech AutoMate cantilevered vehicle lift with 3200kg capacity, 6000mm platform length, 3000mm platform width.



Fh ISOMETRIC VIEW FOR CLARITY



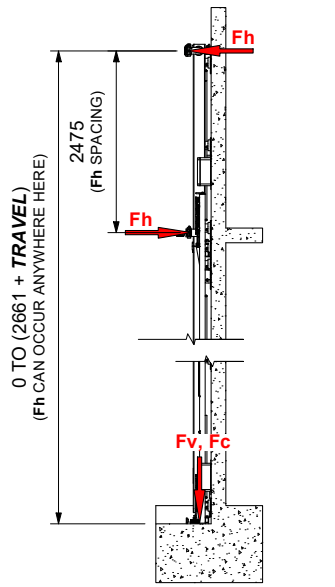
SECTION A-A
(1 : 75)

ANCHORING

Ramset TruBolt Xtrem M20x200

(RAMSET PART NUMBER T20200X)

NO SUBSTITUTIONS!



SECTION B-B
(1 : 75)

TO SUIT THESE ANCHORS FOR THIS APPLICATION, THE WALL BY BUILDER MUST BE:

1. SOLID CONCRETE
2. MINIMUM 32MPa COMPRESSIVE STRENGTH
3. MINIMUM 200mm THICK
4. UNCRACKED (I.E.: SUFFICIENT REBAR)

SHAFT FORCES

Fv = 75kN MAX
OCCURS ON SHAFT FLOOR
QUANTITY 1

Fs = 21kN MAX (EACH)
OCCURS ONLY AS DIAGONALLY OPPOSING PAIR
QUANTITY 2 OF 4 AT ANY TIME
(EITHER CASE **Fs1** OR CASE **Fs2**)

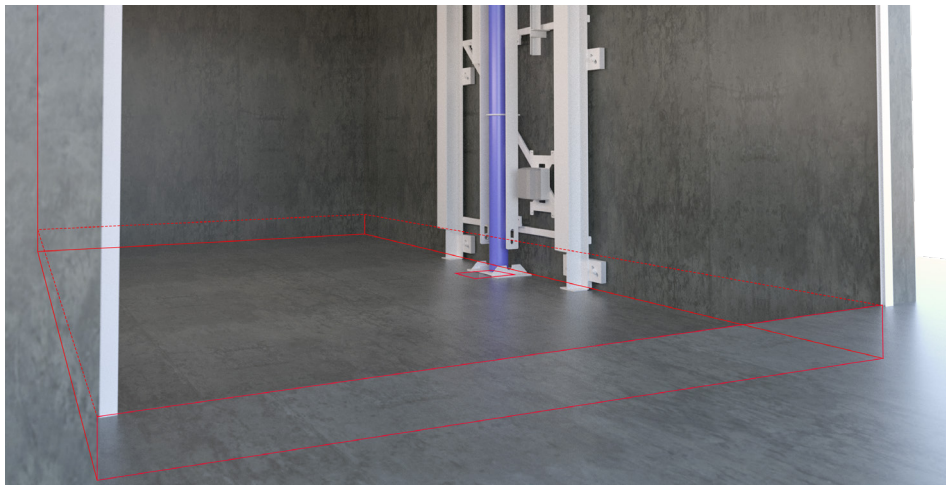
Fh = 31kN MAX (EACH)
OCCURS AS OPPOSING PAIRS
QUANTITY 4

Fs AND **Fh** TRAVEL VERTICALLY WITH THE LIFT CAR AND ARE TRANSMITTED TO THE BUILDING VIA MASONRY ANCHORS BY SAFETECH

Fc = 61kN MAX (EACH)
OCCURS ON SHAFT FLOOR
QUANTITY 2
BOTH **Fc** NOT NECESSARILY EQUAL
SUM OF BOTH **Fc** DOES NOT EXCEED **Fv**

EITHER **Fv** OR **Fc** OCCUR AT ANY TIME (LIFT CAR WEIGHT EITHER SUPPORTED BY HYDRAULIC CYLINDER OR BY CHOCKS)

Caissons & Conduits

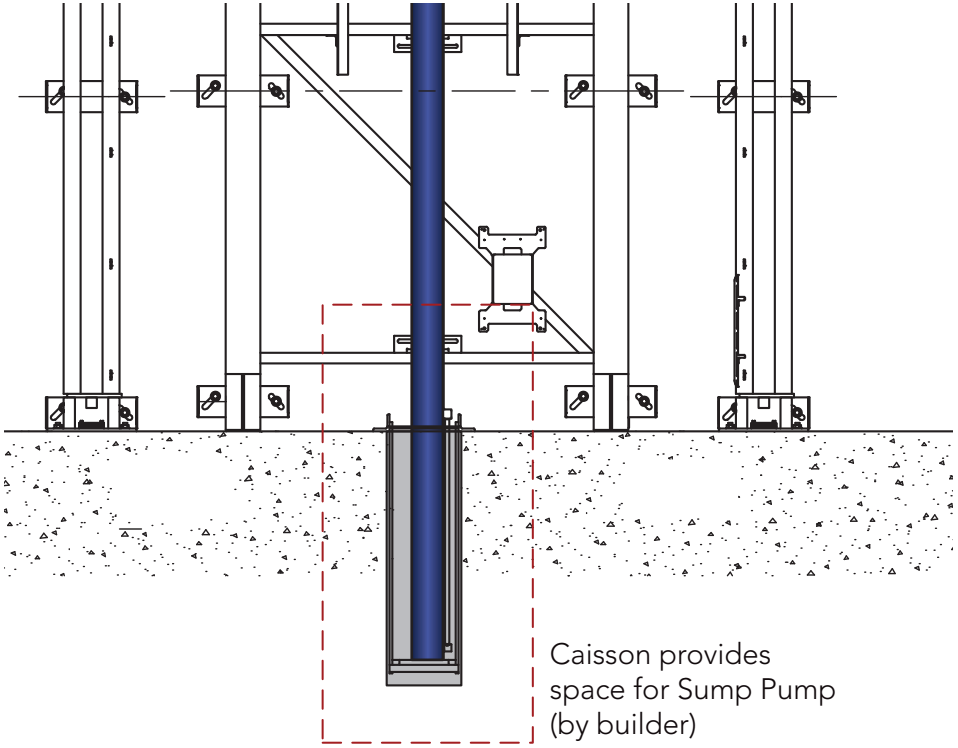


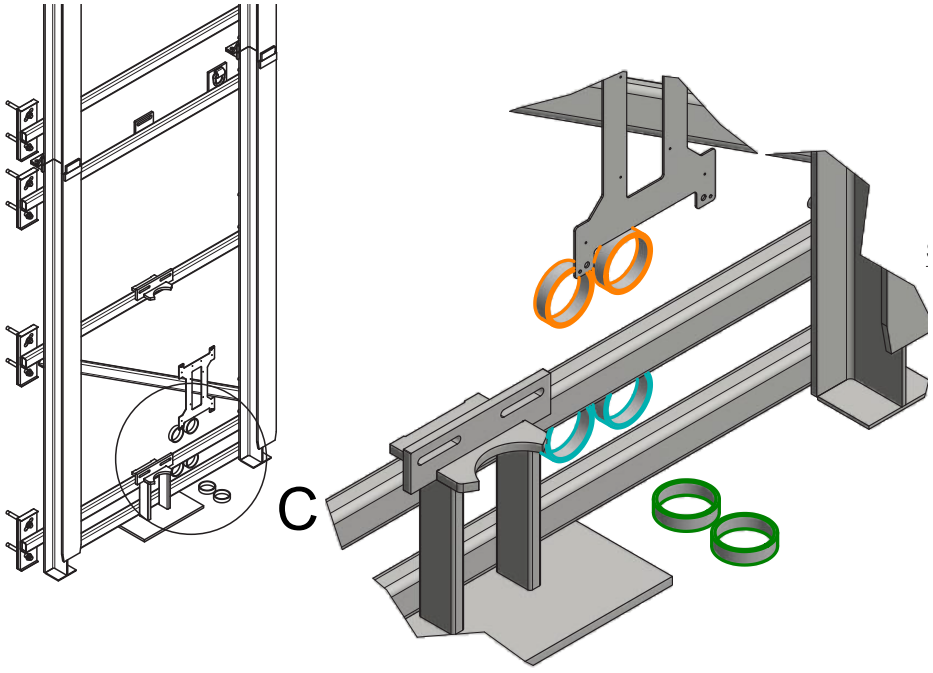
Caissons

AutoMate utilizes a multiple stage direct acting hydraulic cylinder. Some longer travel projects may require a caisson to accommodate the collapsed length of the hydraulic cylinder. Discuss your project with our experienced Sales team to confirm if a caisson is required and what dimension it needs to be. * Cylinder collapsed length can also be accommodated within overrun space where available.

Conduits

Getting into detail here, however should you have restriction we have 3 orientations for the exiting the pair of 100mm control and hydraulic conduits from the base of the lift shaft. These then route to the power unit location* see Power Units



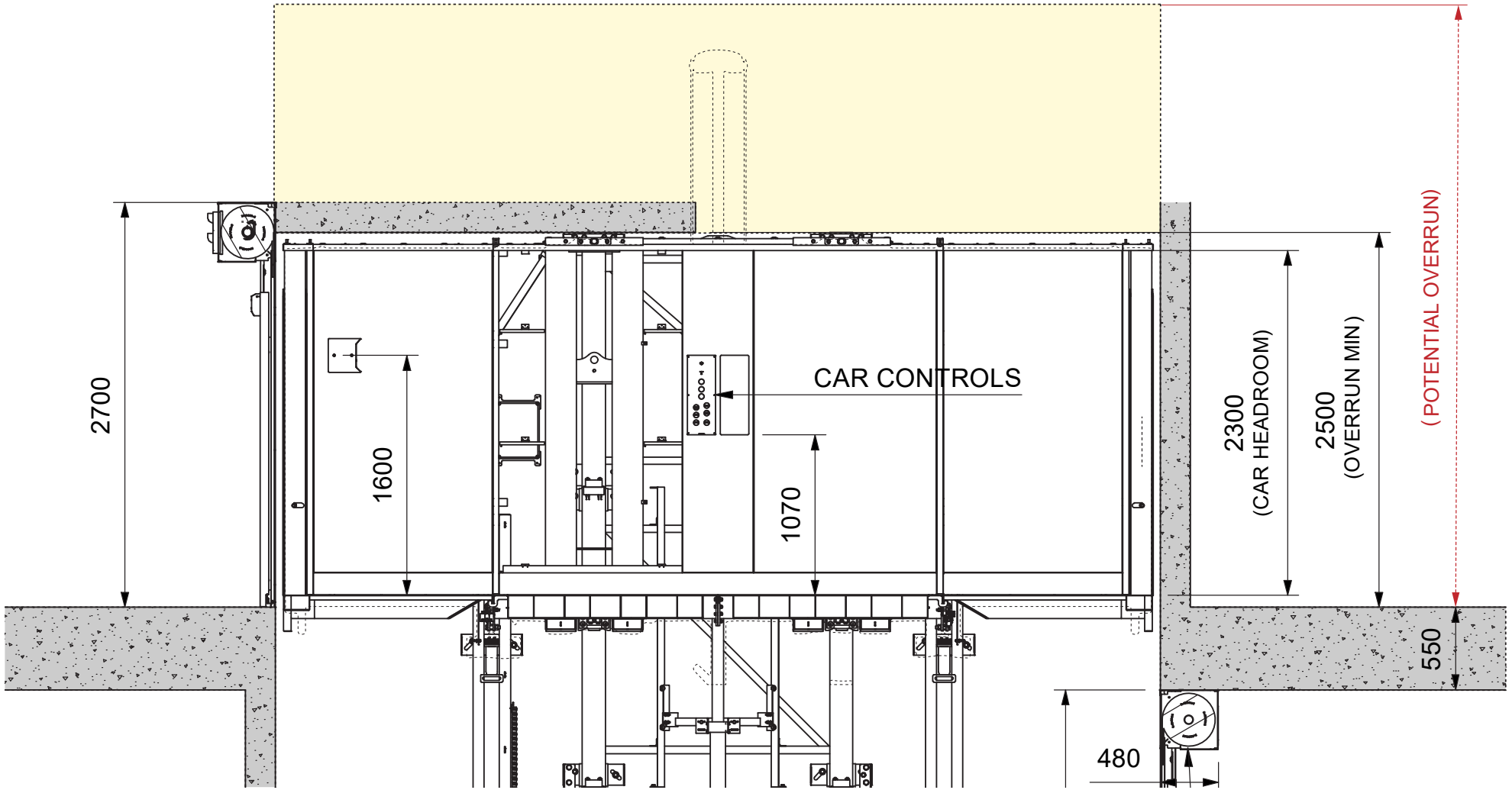


Overruns

Technical Data

Design considers Caisson

With no mechanism above the lift car ceiling we are able to minimize the shaft overrun. This is ideal where the top of the shaft is limited by further building elements above. The minimum shaft overrun can be 2500mm where the upper landing door does not protrude into the shaft or over the booth. Cylinder overrun may need to be accommodated for longer travel where a caisson is not possible.



Air flow & ventilation

Technical Data

Our airflow design intent is to maximize free air movement between the AutoMate Platform and the lift shaft, whilst facilitating return air via door openings up to our maximum clear area achievable. Reference the door section for the maximum perforation % available.

Mechanical shaft ventilation remains outside of Safetech's scope however the ventilation within the platform is achieved through platform linings that facilitate air movement: Wall Linings (40% perforation) and ceiling linings (75% open) available.

SPECIFICATIONS

MAGENTA OPEN AREA = 0.9 m2

GREEN OPEN AREA = (0.6 + 6*X/1000) m2

TOTAL OPEN AREA = (1.5 + 6*X/1000) m2
DEFAULT X = 0

AutoMate car floor can not easily be perforated.

AutoMate car walls can be perforated at extra cost. Perforated option is approximately 40% open.

AutoMate by default has no car ceiling. Car ceiling can be added at extra cost, with perforated options available. Most perforated option (eggcrate) is approximately 75% open.

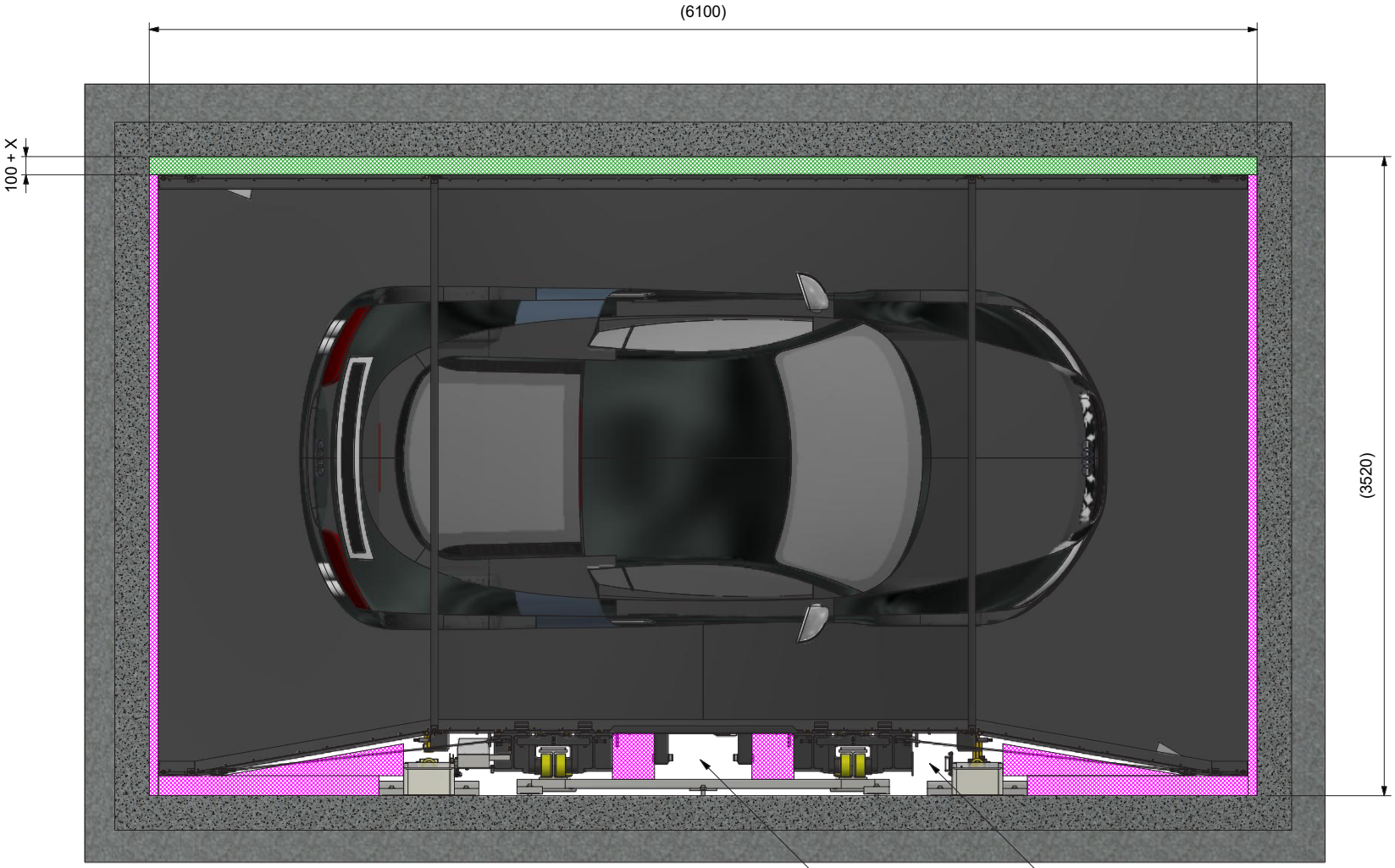
AutoMate by default has no car doors. Car doors can be added at extra cost, with perforated options available. Perforated roller shutter doors are approximately 15% open.

Adding car ceiling or car doors may result in a significant reduction in lifting capacity, or significant extra cost for machine structural upgrade.

Landing doors may have perforated options available, possibly at extra cost. Perforated roller shutter doors are approximately 15% open. Other doors may have higher open area.

Correct ventilation of the lift shaft is the building designers responsibility.

Plant room ventilation is by others.



PLAN
(1 : 25)

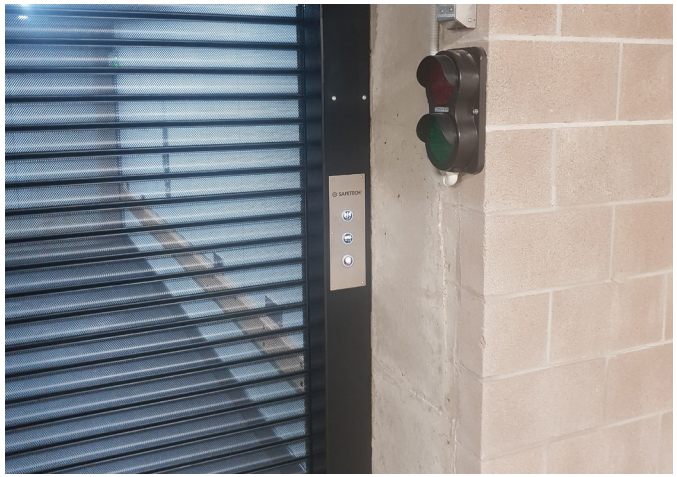
Our door and lining options facilitate maximum free air movement between the AutoMate platform and lift shaft. In addition we can aide the building return air requirements from internal building levels via the lift shaft.

Air flow & ventilation

Material Treatments

Aluminium perforated slat doors

Great presentation door with various finishes. Compatible with the DuraFast™, and delivering 15% perforation.



Steel perforated slat doors

Provides ventilation to 30% of total door area and to doors of greater spans than aluminium. (May require DuraMax™ door drives)

Roller Grill

Lightweight option for basement levels, and great for showing off your custom vehicle lift. (Suited to private residential applications only)

Perforated mesh walls

Steel mesh panelling with up to 40% open surface area, ideal for fire rating requirements and maximising platform ventilation.

Egg-crate mesh

A quality ceiling design incorporating our LED down lights, 75% open for ventilation and conceals the shaft internals.

Open roof

Our default design, delivered with a pair of high powered LED light panels.

Doors

Lifts that don't keep you waiting

Contact Safetech for more information and advice on what may suit your needs best.

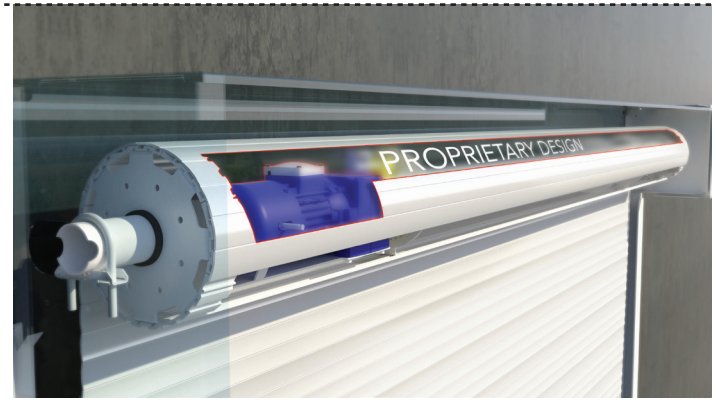
DuraFast™

HIGH SPEED ROLLER DOOR

Our DuraFast™ door has been designed from the ground up.

They are faster, quieter and tougher.

Tested to more than 100,000 cycles



Sectional Doors

ARCHITECTURALLY SENSITIVE DESIGNED DOOR PANELS

Options including:

- Insulated
- Transparent
- Ventilated
- Lay-flat
- Various colours for all applications.

Custom Doors

NESTED ROLLER DOORS

- Roof integrated housing to maximise clear door opening

SLIDING DOORS

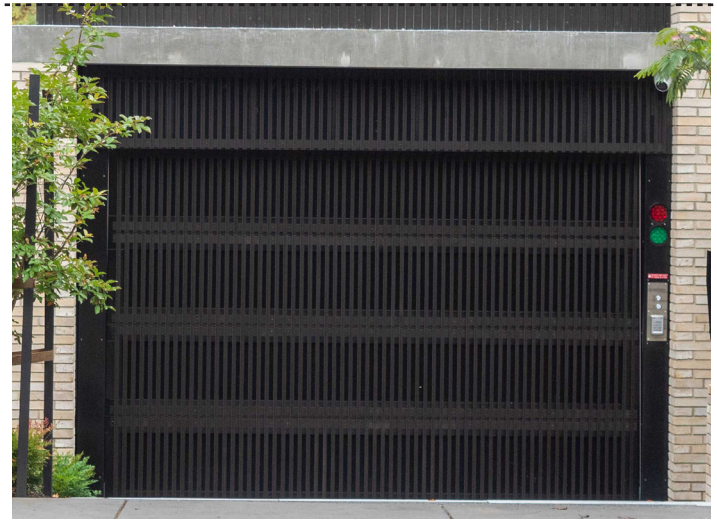
- Hotel personnel lift style doors

SWING DOORS

- For extremely low roof scenarios

PERSONNEL DOOR INTERLOCK

- Recessed lock for secure pedestrian access

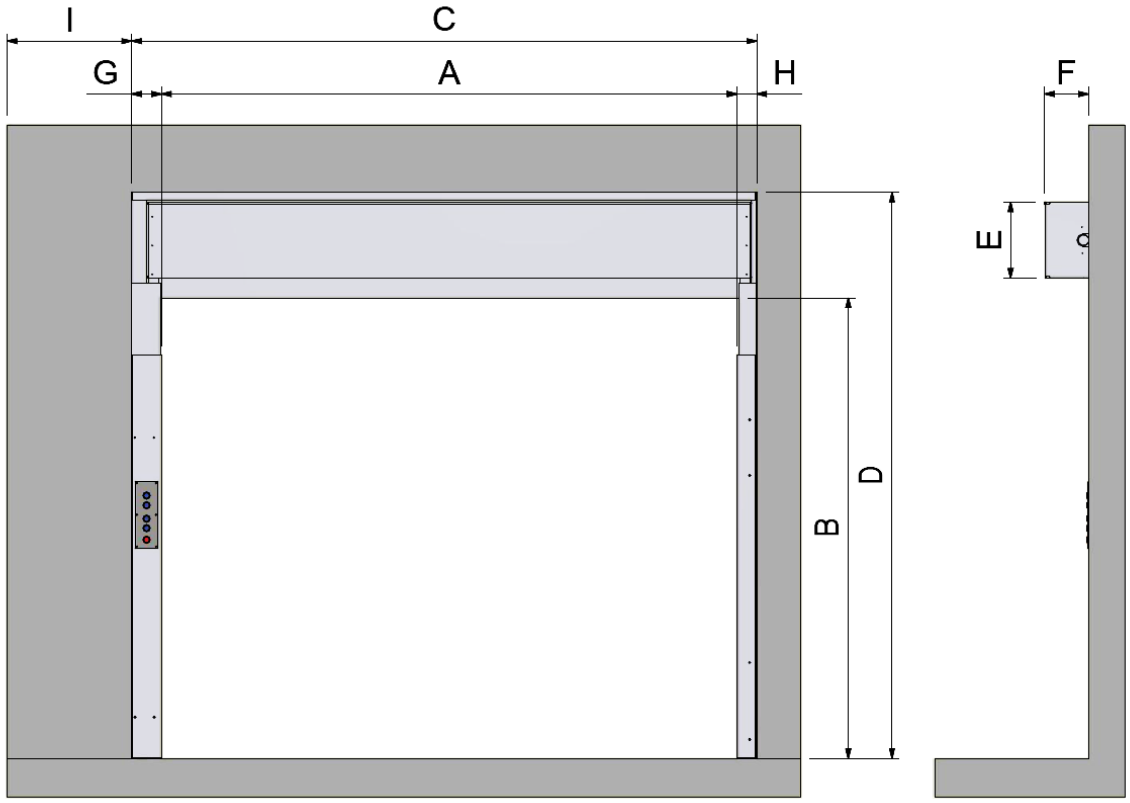


DuraFast high speed roller door

- Designed and built by Safetech from the ground up.
- High speed roller door (up to 2x faster than traditional doors.
- Recess into shaft wall provides minimal protrusion into walkway.
- Control Panel can be Left Hand or Right hand.
- Aluminium Shutter provides a smooth quiet operation.
- Powered by RPU by Safetech
- Internally mounted door motor, power to control panel end.
- Interlocked with hoist movement.

Contact Safetech for additional information.

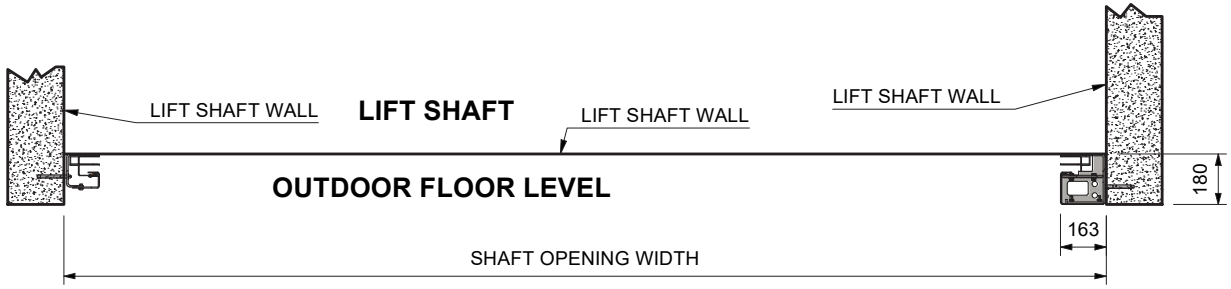
Description	Dimension	Standard (mm)	Max (mm)
Door Opening Width / Platform Width	A	2800	3400
Door Opening Height	B	2200	2700
Wall Opening Width	C	A + G + H	
Wall Opening Height	D	B + 550	
Door Pelmet Height	E	400	
Door Pelmet Protrusion	F	230	400
Control Side Width	G	156	
Opposite Side Width	H	104	
Door Opening to Back Wall	I	Contact Safetech	



DuraMax roller door

For door opening spans greater than 3400mm (up to 5500mm) and for supporting heavy slat types, including steel and perforated steel.

The drive motor is externally mounted, but designed to be mounted left or right, and it can be positioned vertically down, horizontally or vertically up (depending on available space)



SECTION A-A
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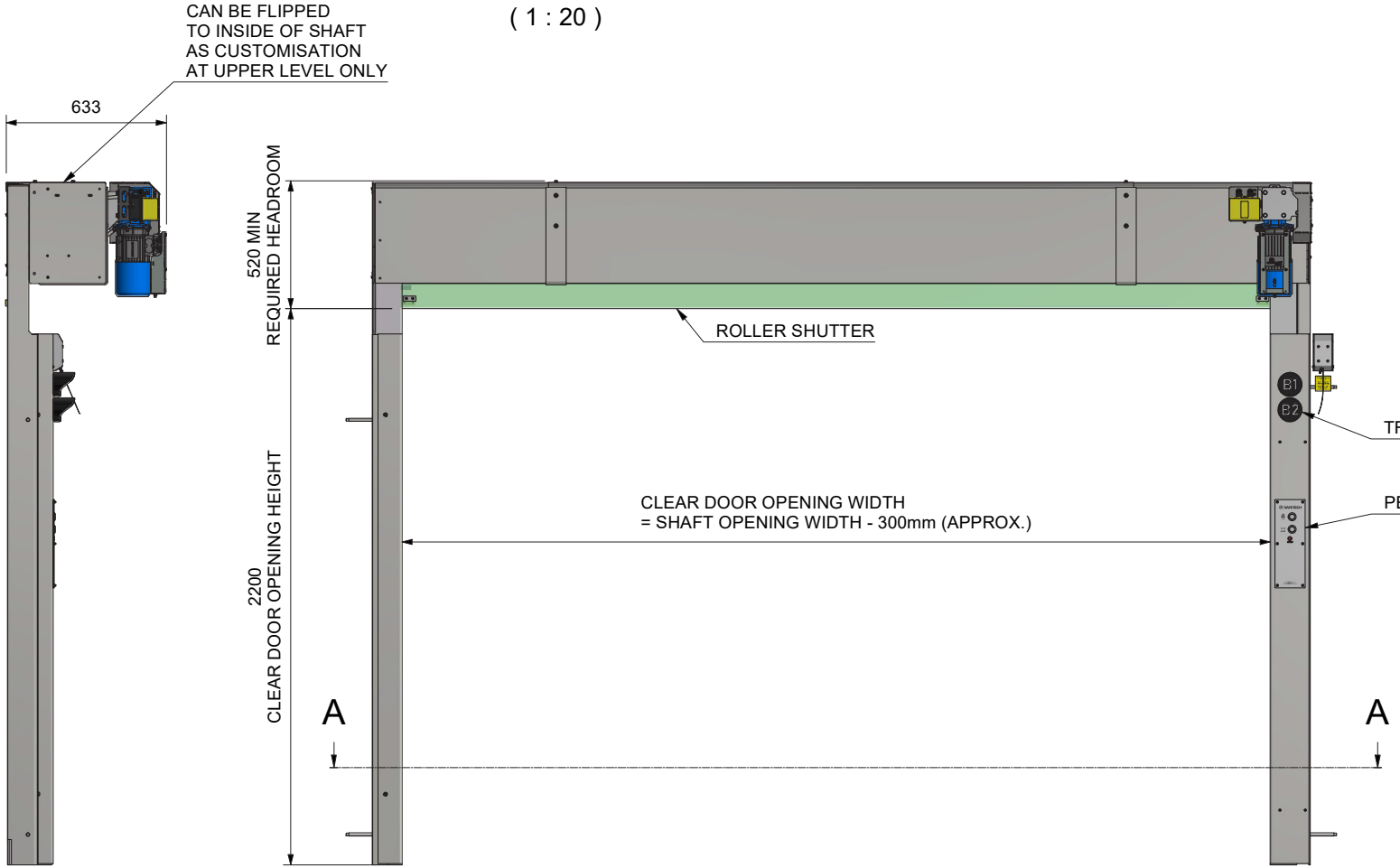
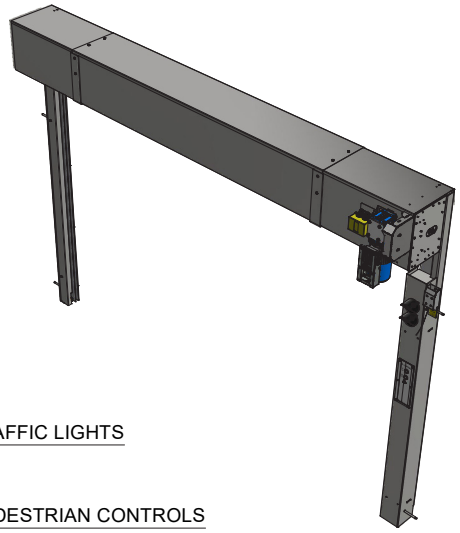




NOTES:
1. MASS: 629 kg

Functional Sequence

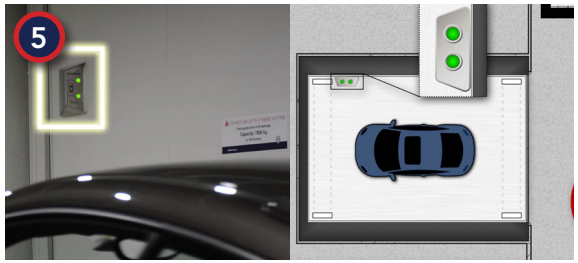
How to use your vehicle lift.

At the ground floor, Slowly approach the lift and press the button on your remote that matches your desired level.

The call light will flash confirming your travel request.

When a lift becomes available, the red light will turn on for level you have chosen.

When the lift arrives, wait for any vehicles to leave the lift, and ONLY begin driving on when the light turns green.

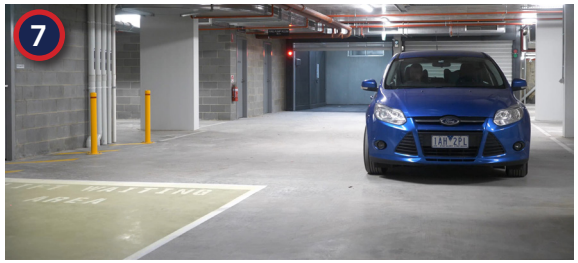


Drive slowly onto the lift, paying close attention to the park assist lights on the right hand wall.

2 green lights will indicate correct positioning and will allow the doors to close.

Turn your vehicle off and try to stay in your car during travel.

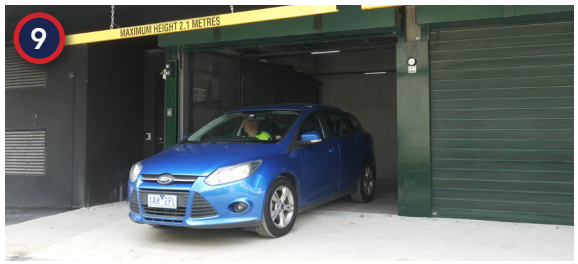
Stay well clear of the front and rear doors to prevent the lift from stopping.



When you reach your destination drive out slowly, being careful not to drive over waiting bays or stopping in front of waiting lift users.

From the internal levels, Simply park in the waiting bay under the overhead sensors.

The call light will flash confirming your travel request.



When you reach the ground floor, exit slowly, ensuring you do not stop or block any waiting vehicles.

For other travel options, please speak to us.

Control - Residential system

Controller: Safetech Designed Control Access

Controls can be set up to have the hoist waiting at ground level. As you approach home simply press the up control and drive in like any other garage.

Close the door and then proceed to your basement or mezzanine level without the need to reach outside of your vehicle.

	Vehicle Access	Pedestrian Access
Ground Level	**2 BUTTON ELSEMA REMOTE**	No controls as standard.
Onboard	For all vehicle based travel. Including opening doors.	**KEYPAD & RFID READER** To enable controls.
Other Levels		**CALL BUTTON** Where security is not an issue inside the building.

Options

4 BUTTON ELSEMA REMOTE

To separate door and lift with raise/ lower control.

GROUND LEVEL KEYPAD & RFID

For pedestrian access

Control - Multi user system

Controller: Industry Standard Access Controller

Drivers simply press their destination level, wait for the door to open and proceed onto the platform.

The onboard controls will illuminate to confirm its destination and the occupied lift will automatically proceed to the level and open the level door.

Safetech Multi User controls are web based and provide building administrators with control over access, default levels and optimise cycle times.

Consider utilising your site wide access control supplier to deliver your credentials and remote control units for your project.

They are then able to be the single source for all things 'Access Control'. Safetech will work with your nominated supplier, specifying our required Inputs/outputs ensuring a seamless handshaking of systems.

Where this approach is taken the AutoMate is operable in the event of the access control system being offline.

Options

RFID TAGS/FOBS

For pedestrian travel. Enables use of onboard controls

NO-TOUCH CONTROL SYSTEM

For automatic return to ground on floors with dedicated waiting bays

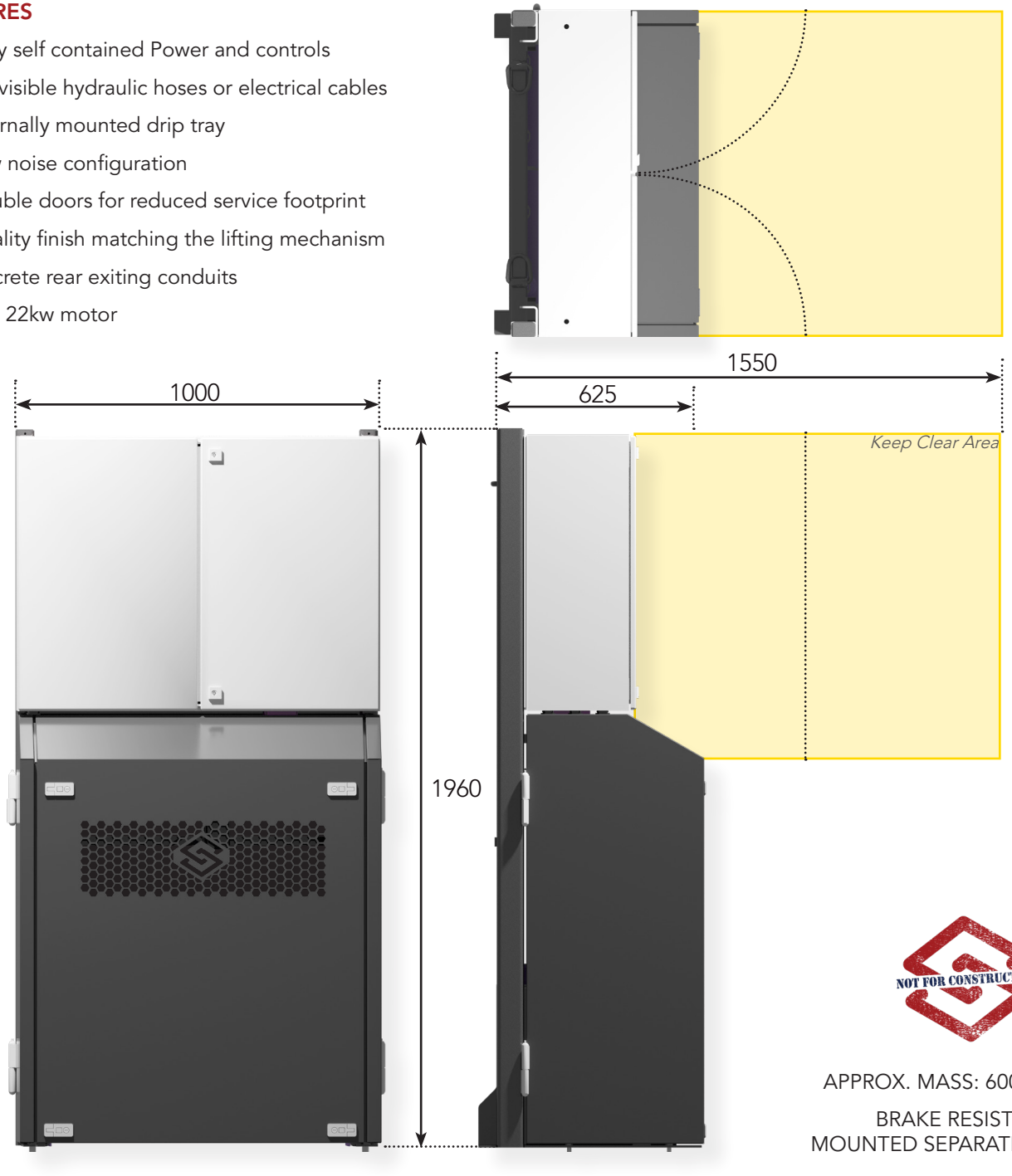
	Vehicle Access	Pedestrian Access
Ground Level	 **RFID 4 BUTTON REMOTE** For destination input.	 **KEYPAD & RFID READER** To enable landing control panel.
Onboard	No input required. Destination is pre-programmed.	 **KEYPAD & RFID READER** To enable onboard control panel.
Other Levels	 **PHOTOELECTRIC SENSOR** For automatic return to ground. *(optional)*	 **CALL BUTTON** Where security is not an issue inside the building.

Remote Power Units

Power Cabinet

FEATURES

- Fully self contained Power and controls
- No visible hydraulic hoses or electrical cables
- Internally mounted drip tray
- Low noise configuration
- Double doors for reduced service footprint
- Quality finish matching the lifting mechanism
- Discrete rear exiting conduits
- 11 - 22kw motor



NOT FOR CONSTRUCTION

APPROX. MASS: 600kg

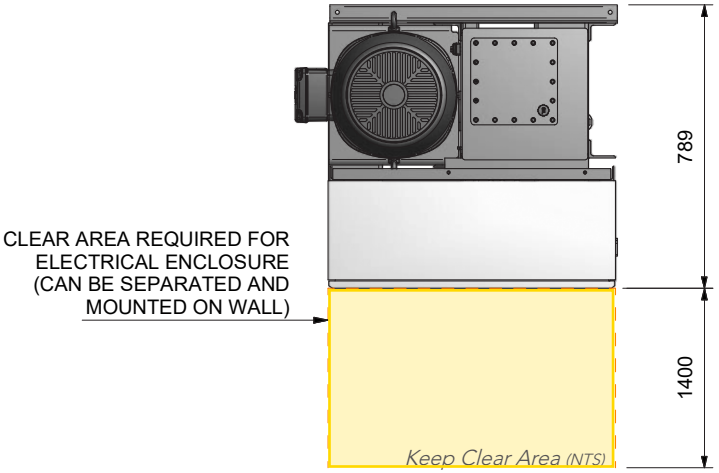
BRAKE RESISTOR
MOUNTED SEPARATELY

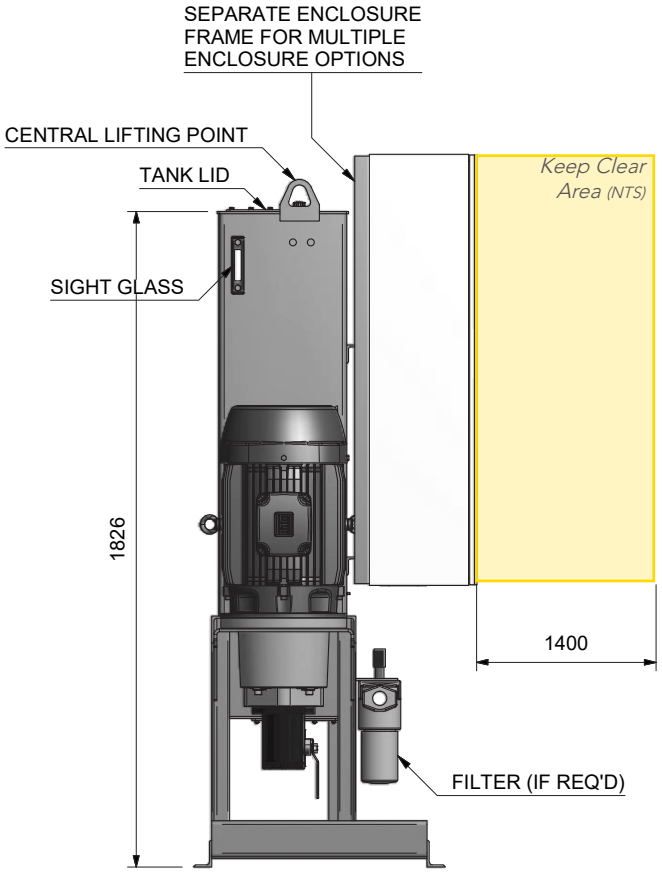
Remote Power Units

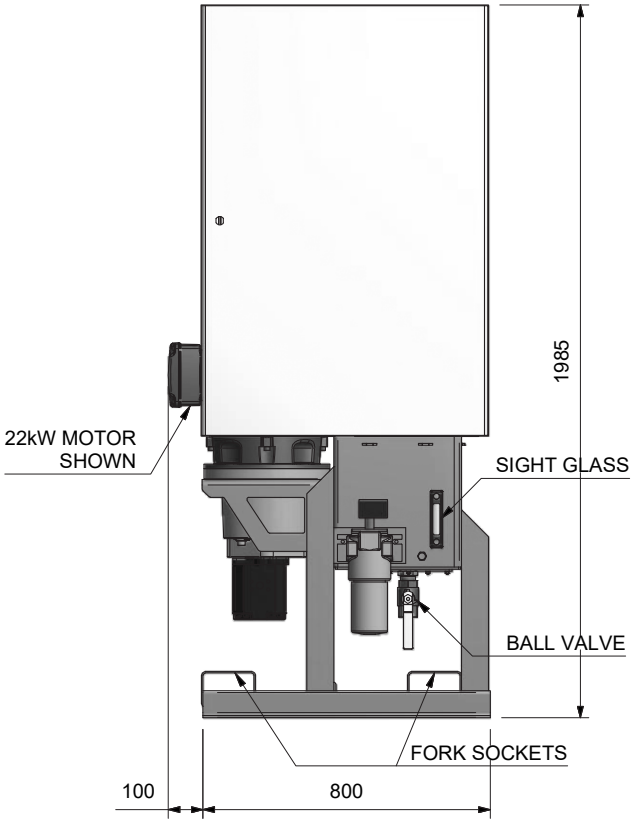
Plant Room Power Unit

FEATURES

- All in one power and control unit
- Configured for ease of maintenance & access
- Ideal for dedicated plant rooms
- Quality finish matching the lifting mechanism
- 11 - 22kw motor
- Lockable enclosure







NOT FOR CONSTRUCTION

APPROX. MASS: 600kg

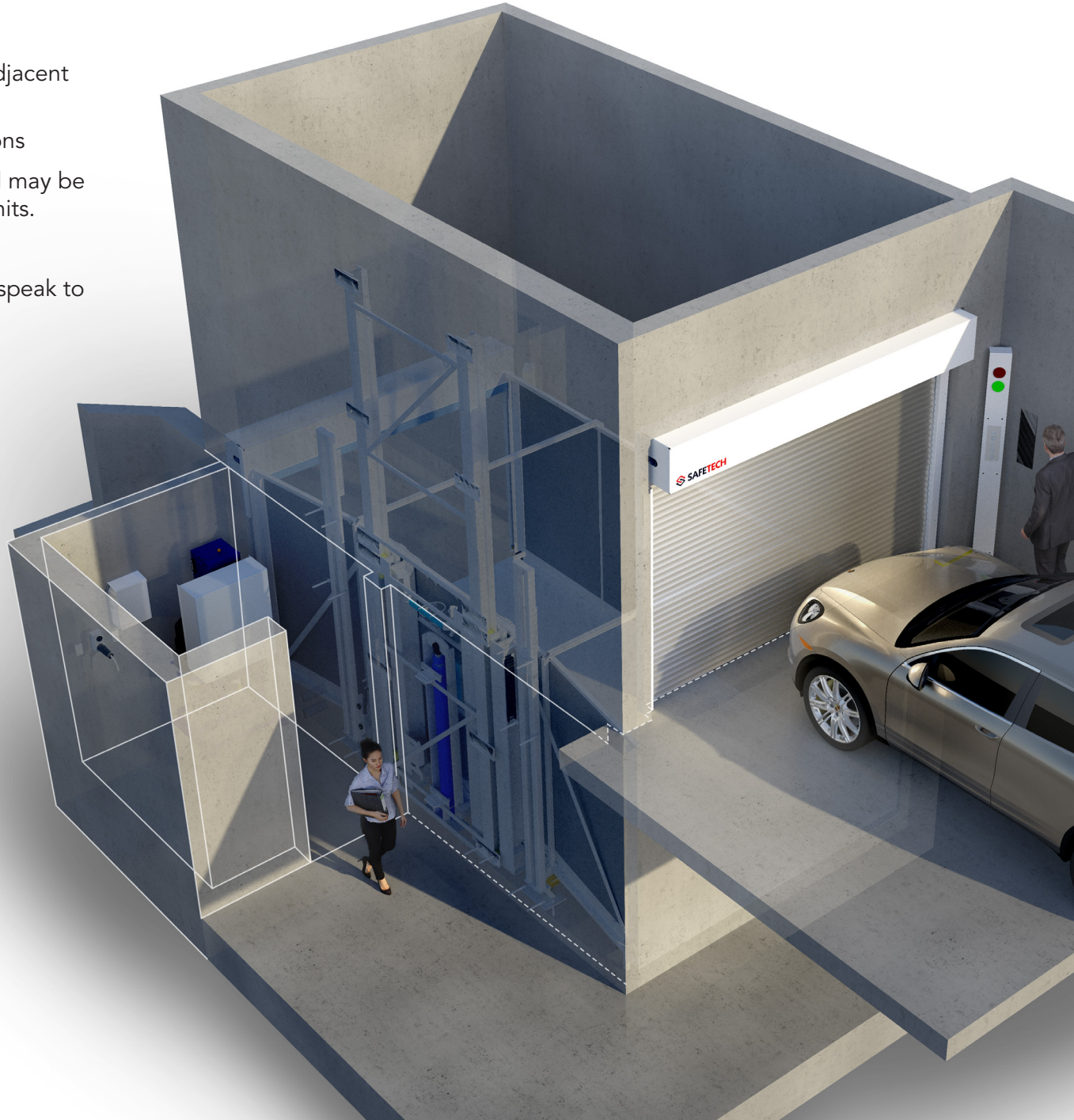
BRAKE RESISTOR MOUNTED SEPARATELY

Power unit Installation

Location advice and requirements

- Ideal location for the power unit is in its own room adjacent to the lift.
- Lowest floor is preferred for optimal running conditions
- Dedicated plant room ventilation and climate control may be required by builder to accommodate larger power units.

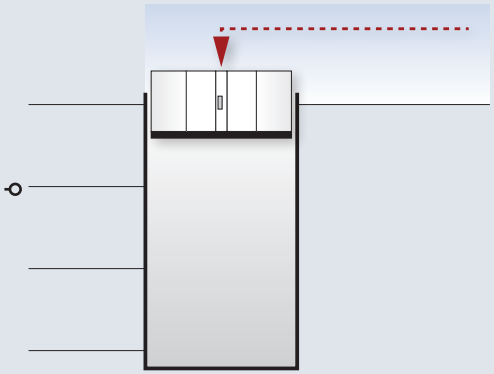
If any of the above requirements cannot be met, please speak to us to discuss other design options.



Installation

Our installation management teams will work with you to ensure your critical building path is maintained.

There are 3 typical install methods. They are listed in order of preference.



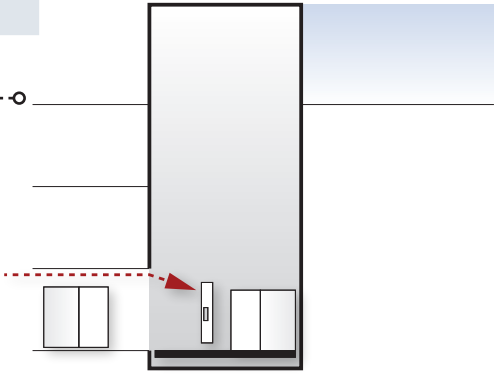
1 Through open top shaft with site crane

Allows pieces to be delivered in larger sections.

Primary pieces are offloaded and positioned with the site crane or external crane depending on scope and job specifics, prior to the shaft being capped by the builder.

Secondary pieces are held in storage at Safetech and for fit out at later time closer to end of project.

About 20% more efficient in the install hours where large component or wide load delivery is possible.



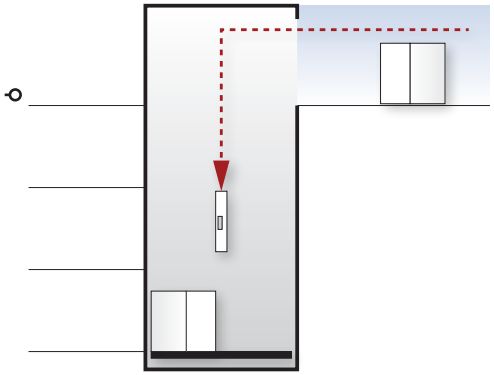
2 Bottom up installation via lowest shaft entry/door opening

Pieces are delivered to site in smaller sections, need to be delivered to the lowest floor of the AutoMate.

We are not in the critical path of the builder's program but access of the items to the lower level needs careful evaluation.

Typically, this type of install does not involve basement levels and the hoist travels from ground level up.

Requirements for lifting points in the shaft roof by the builder.



3 Top down Installation, via the upper level/ground level shaft entry/door opening

Pieces and equipment are delivered and held at the ground level adjacent to shaft entry point.

High risk activity working near live exposed edge when getting the pieces into the shaft.

Requirements for lifting points and projecting lifting beam on to ground level from shaft entry by builder, where applicable. Alternatively, a Franna crane may be utilized for installation via the upper door entry where access and install path allow.

Typically, the longest installation hours of all AutoMates.

Traffic & throughput

Cycle time assessment

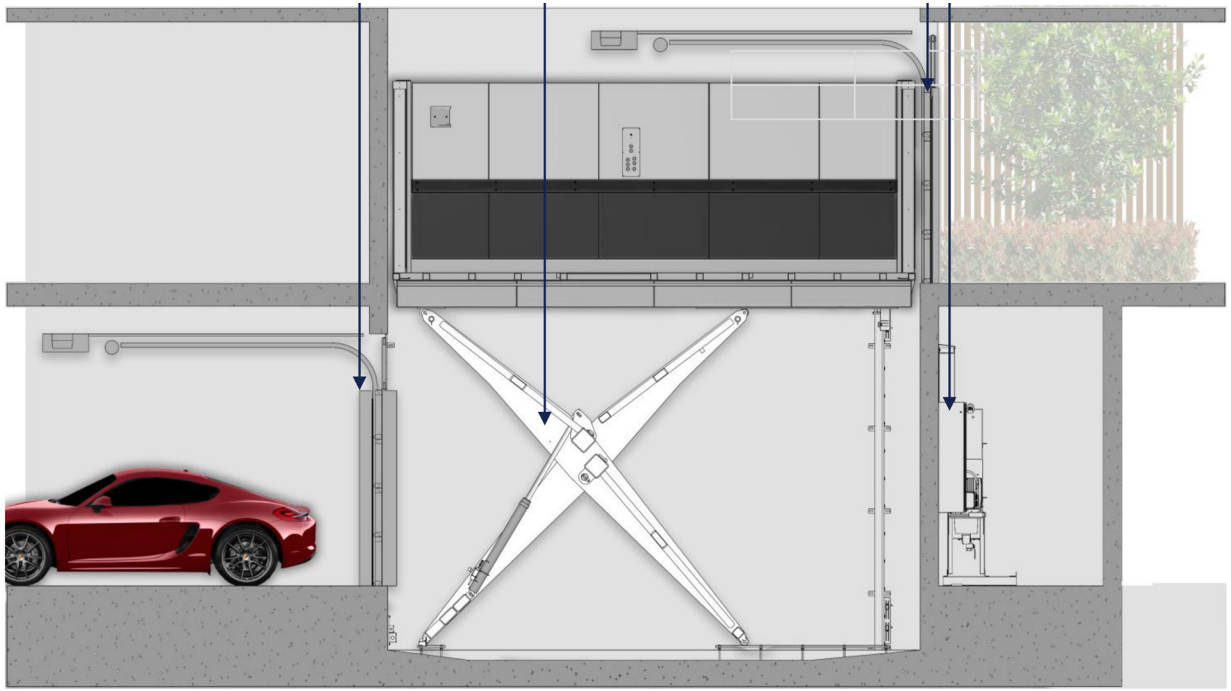
Clearing street level vehicles is our priority. We have a multi pronged approach to achieving this:

- Maximising our lift speed
- Increased door speeds (up to 50% faster)
- Streamlined vehicle based control

With every lift cycle there are multiple door operations and with our faster door openings we are able to achieve improved cycle times even where the speed of the lift differs.

See the below example of how our Durafast roller door improves traffic flow.

For an interactive version of this view, visit our website.



Example info and machine specs		
Travel Height (m)	4	
Safetech Hoist Speed (m/min)	15	(0.25m/sec)
Others Travel Speed (m/min)	12	(0.2m/sec)
Durafast Door Open Time	5	
Others Door opening time	11	

	Safetech + Durafast	Others
Approach Lift, Press Button		
Upper Door Opens	5	11
Enter the Lift, press button	5	5
Upper Door Closes	5	11
Average travel time (sec)	16	20
Lower Door Opens	5	11
Exit the Lift	5	5
Lower Door Closes	5	11
Dwell Time (The time that doors wait to ensure clear openings)	10	10
Total Travel Time (sec)	56	84

Time Saved Per Trip (sec)	%
28	33

Traffic & throughput

Side-by-side lifts ensure consistent movement and redundancy protection

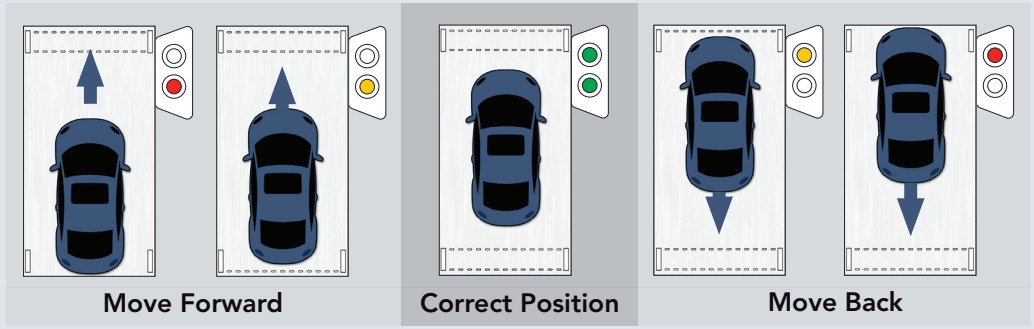
Where high peak throughput and redundancy protection dictate, Safetech delivers a pair of AutoMates with a central controller.

The central control manages the call inputs and makes decisions on which lift to carry out the call, minimising wait times.

Park Assist and Communications

The Safetech Park Assist system provides intuitive feedback about the position of your vehicle.

Various integrated mounting options are available upon request.



Lights & signalling

Lift Call	Confirms a users travel request via the remote FOB
Level specific traffic lights	Your level illuminates red when a lift has been allocated to your travel request. Light changes to green when the lift has arrived and becomes vacant.
Park Assist	Multi LED positioning assistant, see previous page for more information
Onboard control panel	Modern lift style push buttons that illuminate to communicate current actions. Layouts will vary between projects.
Landing control panel	**- Internal levels -** Modern lift style push buttons that illuminate to confirm your request. **- Ground Level -** capacitive static buttons to prevent abuse and provide greater weather resistance.
Stopped car indicator	Shows that the lift is not moving
Security Keypad	For secure pedestrian travel. Entering your code enables the buttons
Key Override	For exclusive lift use, authorised personal, or maintenance.

Artist impression, your layout may differ

Paint

Standard colour options.

Custom colours available upon request.

Safetech Blue

Colorbond Night Sky

Colorbond Monument

Colorbond Deep Ocean

Colorbond Surf Mist

Finishes

Lifts that match your style

Vehicle lifts may be hidden from the street but that doesn't mean they should be dark and industrial.

Users shouldn't feel like they are riding in a rubbish chute when they arrive home.

Safetech offers you quality finishes and custom touches.

Standard Finishes

Versaboard Wall Panels

Versatile, easy to maintain and replace

Sand Grit Enamel

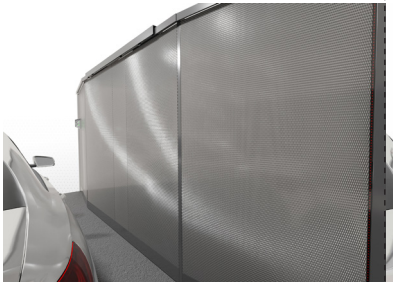
A non-slip professional gloss finish.

Protective Surface Treatments

- Stainless steel components.
- Surface protection options for wet locations.
- Fireply™ panels to meet fire rating guidelines.

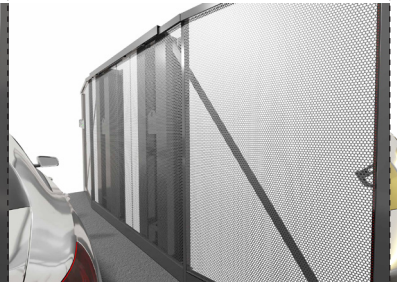
Stainless Steel

For the modern high end look



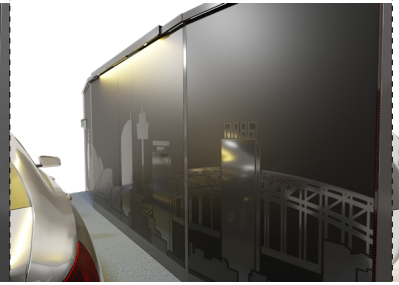
Perforated Mesh

Perforations to 40% for improved ventilation



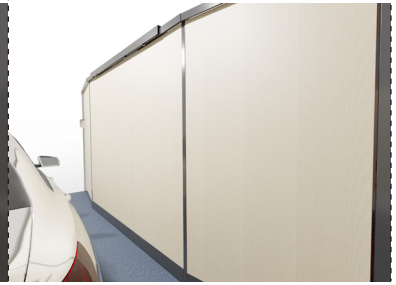
Custom Print

Professionally designed graphic.



Laminex Panelling

Professionally designed graphic.



Standards Glossary

The following regulations or Standards may apply to Safetech Equipment as applicable

General machine design

AS1418.8, AS1735.3, or EN81-20 as applicable

For Vehicle Vertical Transport
(as applicable)

BCA Features

AS5216 Masonry anchoring

AS3990 Steelwork

AS1668.2 Ventilation

AS3000 Electrical

AS/NZS 2890.1 platform size (accommodating B85, B99 vehicles)

AS4586 Slip Resistance

Safetech's ability to work to/comply with standards is subject to additional works requirements by builder, including but not limited to civil, electrical, mechanical works and compliance.

APPENDIX 4

TRAFFIC LIGHT CONTROLLERS

Traffic Light Controller Specifications:

Model SKU:	AGDTC-1
Power requirements:	240Vac, 10 Amps maximum.
Programmable Logic Controller:	Mitsubishi Alpha 2.
Vehicle detection options:	Ultra-sonic Detector (standard), Loop, PE Beam, Access Control.
Enclosure dimensions:	500 (h) x 400 (w) x 200 (d)
All red clearance:	Programmable 0 – 255 seconds.
Green period:	Programmable 0 – 255 seconds.

AGD Systems Pty Ltd

Unit 17/15 Valediction Road, Kings Park, NSW 2148

P: 02 9653 9934 E: Sales@agd-systems.com.au

LED TRAFFIC LANTERNS

100mm 12-24V**dc**

This LED type traffic lantern is suitable for a variety of applications where there is a need for traffic control or indication, such as car parks, mine sites, race circuits, weigh bridges, car & truck washes.

Made from quality materials, this traffic lantern is dust proof and weatherproof, and has much lower energy consumption and maintenance costs than incandescent or fluorescent lamps, as well as a much longer operational life.

The red, yellow and green LEDs are brighter than most lamps and will operate satisfactorily at very low voltages, making them ideal for use in harsh environments or where safety is paramount.

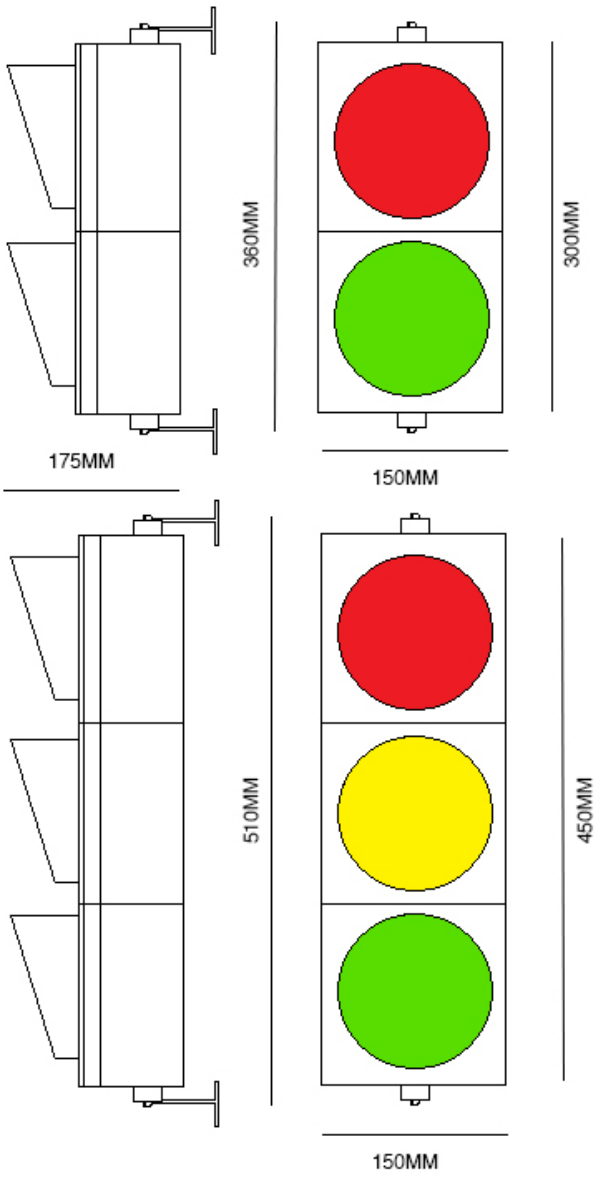
This unit is very similar to those normally seen at traffic signal controlled intersections, with a comparable light output.

Available in Red,Amber, Blue or Green LED Modules.

Specifications

Power Supply: 12-24Vdc
Power Consumption: 80mA @ 12Vdc, 50mA @ 24VDdc (Red and Yellow Module) 150mA @ 12Vdc, 80mA @ 24Vdc (Green Module)
Average life of LEDS: 80,000 hours.
Lens diameter: 100mm.
Number of LEDs: 45 per aspect.
Light output: > 2000mcd/m
Dominant wavelength: Red 625nm +/- 5, Yellow 590nm +/- 5, Green 505nm +/- 2
Housing: PMMA, UV stabilised.
Mass: 1.6kg (2 aspect) 2.4kg (3 aspect)
IP rating: IP65
Sun visors: Fixed.
Operating Temp: -40°C ~ +80°C

Dimensions:



Wiring

Two Aspect 200mm Traffic Lantern:
1 - Common (GND)
2 - LED Module (+12-24Vdc)
3 - LED Module (+12-24Vdc)
4 - Spare

Three Aspect 200mm Traffic Lantern:
1 - Common (GND)
2 - LED Module (+12-24Vdc)
3 - LED Module (+12-24Vdc)
4 - LED Module (+12-24Vdc)

Part Numbers:

100mm 2 Aspect 12/24Vdc - AGD12

100mm 3 Aspect 12/24Vdc - AGD13

AGD Systems Pty Ltd

Unit 17/15 Valediction Road
Kings Park, NSW 2148

P: 02 9653 9934

E: Sales@agd-systems.com.au

W: www.agdsales.com.au

CUSTOMER INFORMATION

EVA510 INDUCTIVE LOOP DETECTOR
Traffic

(Ref.: 510-301 – 510-501)

■ General

The EVA510 is a single channel CW boxed inductive loop detector operating in the 18 to 130 kHz band and has been specifically designed for traffic applications. All functional selections are made by the setting of switches on the front panel of the detector. There are no selections available inside the detector.

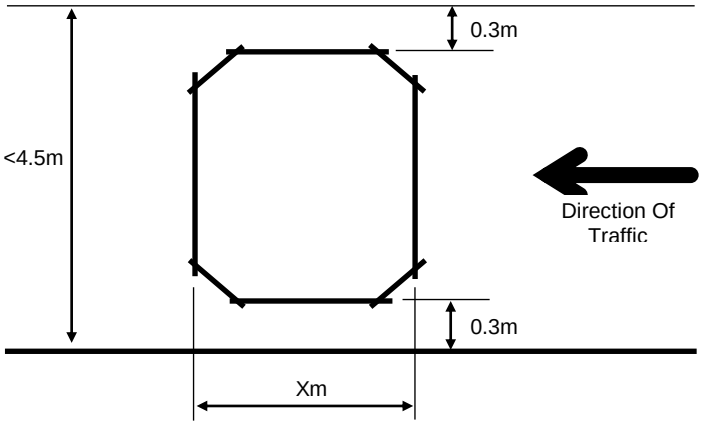
■ Electrical Connections

The detector is marked on the rear label with the voltage supply to be used and it is essential that the detector is connected to the correct power supply. Consideration must be given to the multiple grounding of supplies and to its effect on the whole system. The installation of this equipment must conform to the latest edition of the IEE Wiring Regulations (BS7671) as applicable.

Pin Number	Connection
1	Live (or positive)
2	Neutral (or negative)
3	Fault Relay O/P Low Impedance For Fault
4	Fault Relay Common
5	Presence Relay O/P Low Impedance For Detect
6	Presence Relay Common
7	Sensing Loop Connection
8	Sensing Loop Connection
9	Earth
10	Presence Relay O/P High Impedance For Detect
11	Fault Relay O/P High Impedance For Fault

■ Installation

Correct installation of the sensing loop will give optimum detection performance. The sensing loop is to be installed in the surface of the carriageway at the point of desired detection. This is performed by slot cutting the carriageway surface of width 0.5 mm greater than the diameter of sensing loop cable to be used and to a depth of n x cable diameter(in mm) +25 mm minimum (where n is the number of turns 2, 3 or 4 which is dependent on the circumference of the sensing loop). The slots should be cut to the guidelines indicated below. Cutting the corners of the rectangle at 45° helps to meet the minimum bend radius limits for the cable used. The cable from the detector to the sensing loop (feeder) should be twisted at a rate exceeding 25 turns per metre. The feeder length should not exceed 150 m.



CUSTOMER INFORMATION

The sensing loop consists of n turns of cable indicated as follows:

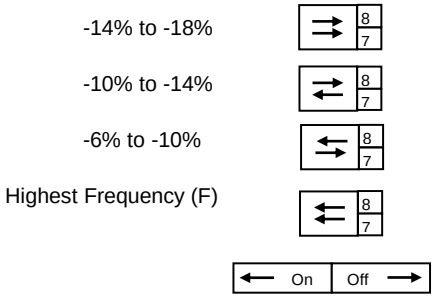
Number Of Turns (n)	Sensing Loop Circumference (m)
2	>10
3	6-10
4	<6

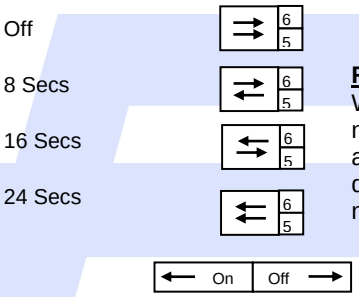
The cut slot should be back filled with quick-set epoxy or hot bitumen mastic. If a second sensing loop is to be installed in the same carriageway then the separation of adjacent edges is to be a minimum of 2 m for adjacent edges of lengths up to 2.5 m and an extra 0.5 m separation for each additional 1 m length thereafter. Care should be taken not to trap water in the slot during back filling as this may lead to unstable detection performance.

■ Detector Operation

Frequency Selection (Switches 7 & 8)

These two switches are used in combination to set four frequency bands appropriate for the inductive load presented by the sensing loop. When both switches are in the OFF position the frequency is at the lowest allowed by the load of the sensing loop. Selecting a combination of the switches as below changes the resonant frequency in increments. The magnitude of the shift in frequency is proportional to the load of the sensing loop connected to the detector. The operating frequency of adjacent sensing loops should be adjusted to be at least 15% apart in the absence of vehicles.



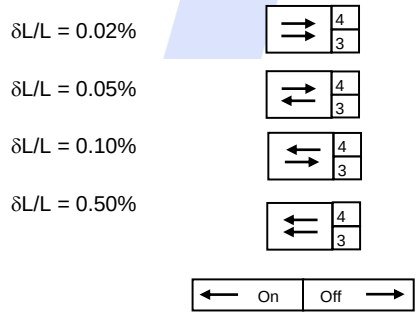


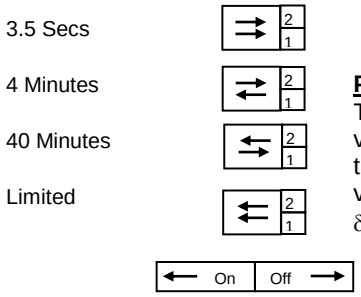
Response Delay (Switches 5 & 6)

When both switches are in the OFF position the detector has no response delay and the normal response of 60 ms applies. A response delay of 8, 16 or 24 seconds can be set as shown below. If a signal is sensed which has a magnitude capable of causing a detection but which does not persist for more than the set response delay then there is no output from the detector.

Sensitivity Selection (Switches 4 & 3)

The detect sensitivity is set by a combination of switches 4 & 3. The sensitivity is expressed as δL/L, the change in inductance above which causes a detection with 0.02% being the most sensitive setting. Settings are as follows:





Presence Time (Switches 1 & 2)

The presence time is the maximum time the detector can return a detect state when a vehicle is present over the sensing loop. The limited presence option has a presence time proportional to the signal of the target stationary over the sensing loop. A typical vehicle produces a presence time of 80 minutes in this mode if the sensitivity is set to δL/L=0.02%.

CUSTOMER INFORMATION

■ Detector Fault Monitoring

The detector monitors its own performance.
The table below shows the different situations that may occur when the detector is powered:

● LED off ● LED on ✸ flashing LED

No vehicle over the loop	●●	The right LED is on.
Vehicle over the loop	●●	Both LEDs are on.
Broken loop (Ω = ∞) or Loop > 2 mH (F < 18 kHz)	●✸	The right LED flashes once per second. The left LED is on.
Loop in short circuit (Ω = 0) or Loop < 20 µH (F > 130 kHz)	✸✸	LEDs flashes alternately at a rate of one per second

The LED(s) will continue to flash even if the fault is self-healing so that a maintenance engineer will be able to recognize that a fault occurred. The fault condition may be cleared by pressing the reset.
The frequency depends on the settings of the selection switches 7 & 8 and on the impedance of the loop. To reduce the impedance (which has the effect of increasing the frequency), it is necessary to reduce the number of turns of the loop. To increase the impedance (which has the effect of reducing the frequency), it is necessary to increase the number of turns of the loop.

IP40 RoHS compliant

USVD-4X

ULTRASONIC VEHICLE DETECTOR

Applications

This device uses Triangular Planar Array (TPA) technology to reliably detect the presence of a vehicle in a wide variety of drive-thru applications including parking, access control, car wash, banking and fast food. Unlike a vehicle loop detector configuration that requires the installation of a loop in the pavement, the USVD-4X may be simply mounted on a post or order box and aimed at the location of the vehicle when in position to perform a transaction or place an order. Also, unlike other technologies, the USVD-4X does not require any set up or functional adjustments, other than simply installing and aiming. The USVD-4X greatly reduces the cost associated with installation of vehicle detection capabilities compared to loop detectors for these types of applications.

The USVD-4X requires 12-24VDC/VAC and provides a form “C” set or relay contacts indicating vehicle presence.

Utilizing TPA technology, the detection head consists of 4 ultrasonic transducers that connect to the internal microprocessor-based control board. The detection head “scans” the expected location for a vehicle and activates its output upon detection of a vehicle.

USVD-4X

ULTRASONIC VEHICLE DETECTOR

- Easy set-up
- Reduces cost
- Triangular planar array technology
- Streamlining operation
- Robust design
- Aux. relay, settings for pulse on ENTRY, EXIT or BOTH
- Output delay option for 1, 2 and 4 seconds

USVD-4X

Technical Data

Sensing elements	4 ultrasonic in TPA configuration
Operating range	1ft. – 5ft.
Response time	2.0 seconds
Relay output configuration	2 SPDT (form C)
Relay contact rating	1A @ 24VDC
Power indicator/no vehicle	Green LED
Object in range	Flashing Green LED on each input, continuous LED on DETECT
Supply voltage	12…24 VDC/VAC
Operating current	60mA
Operating temperature	-40˚C...+85˚C (-40˚F...+182˚F)
Dimensions	5.7”(145mm) x 3.6”(90mm) x 2.3”(57mm)
Weight	0.6 lbs. (275g)
Housing	ABS NEMA 4X
Connection	10 position terminal block
Mechanical protection	NEMA 4X

Ordering Information

- USVD-4X Ultrasonic Vehicle Detector

MADE IN USA

CE

ENGLISH

Datasheet

Stock No: 145-0607, 145-0609, 145-0610, 145-0612, 145-0613

Flush Head Push Button Complete Unit

Specifications:

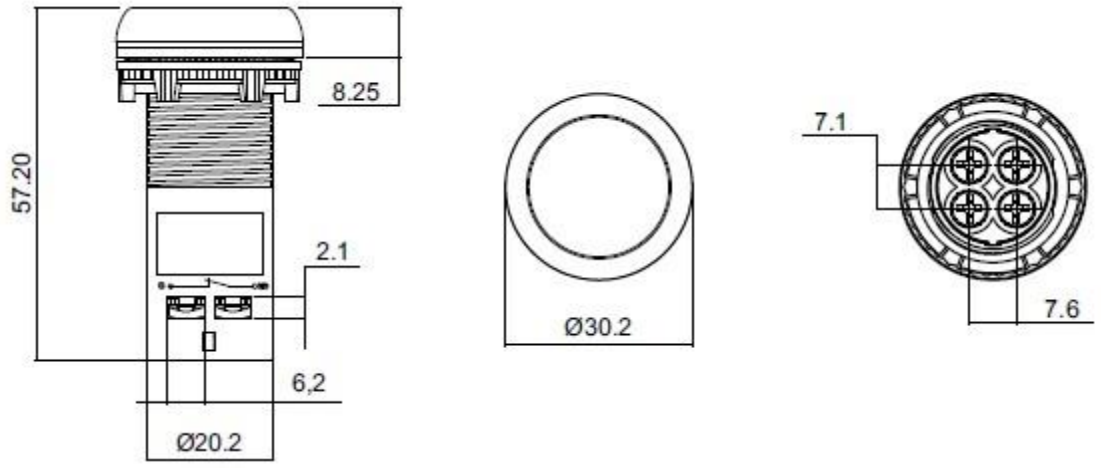
- 22mm Diameter
- Various colours and contact styles available
- Sprung return head
- IP65 rated
- Complete unit with built-in contact block
- Conformity with RoHs directive

ENGLISH

RS Stock No	145-0607	145-0609	145-0610	145-0612	145-0613
Characteristics					
Type	Flush Head				
Mounting Diameter	22mm				
Colour	Green	Red	Yellow	Black	Blue
Contact	1NO	1NC	1NO	1NO	1NO
Function	Push				
Type	Non Illuminated				
Weight	20g				
Mounting	Fixing hole: Ø 22.5 mm				
Fixing Centre	Locking nut beneath head				
Terminal Torque	0.8 Nm				
Contact Type	Make & Break				
Mechanical Life	1 million cycles				
Electrical Life of Contact	0.5 millinon cycles				
Utilization Category – Supply	**IEC-60947-5-1**	**UL-508**	**ITH/Thermal Current**		
Utilization Category – AC	AC-15	A600	10A		
Utilization Category – DC	DC-13	P300			
Rated Voltage and Current – 230Vac	6A				
Rated Voltage and Current – 120Vac	6A				
Rated Voltage and Current – 24Vdc	1.5A				
Current Carrying Material	Brass				
Contact Material	AgNi				
Housing Material	Nylon FR				
Operating Temperature	-25°C to 65°C				
Storage Temperature	-30°C to 70°C				
Hv Test for 60 sec	2.5KV (All Terminal Shorted Together)				
Insulation Resistance at 500 VDC	50 M Ohm				
Contact Resistance	20 M Ohm				
MV drop at 16 A DC	200 MV				
IP Rating	IP65 above panel (As per IEC/EN -60529) & IP20 for Terminals NEMA 1,2,3,4,4X class 12 & 13				

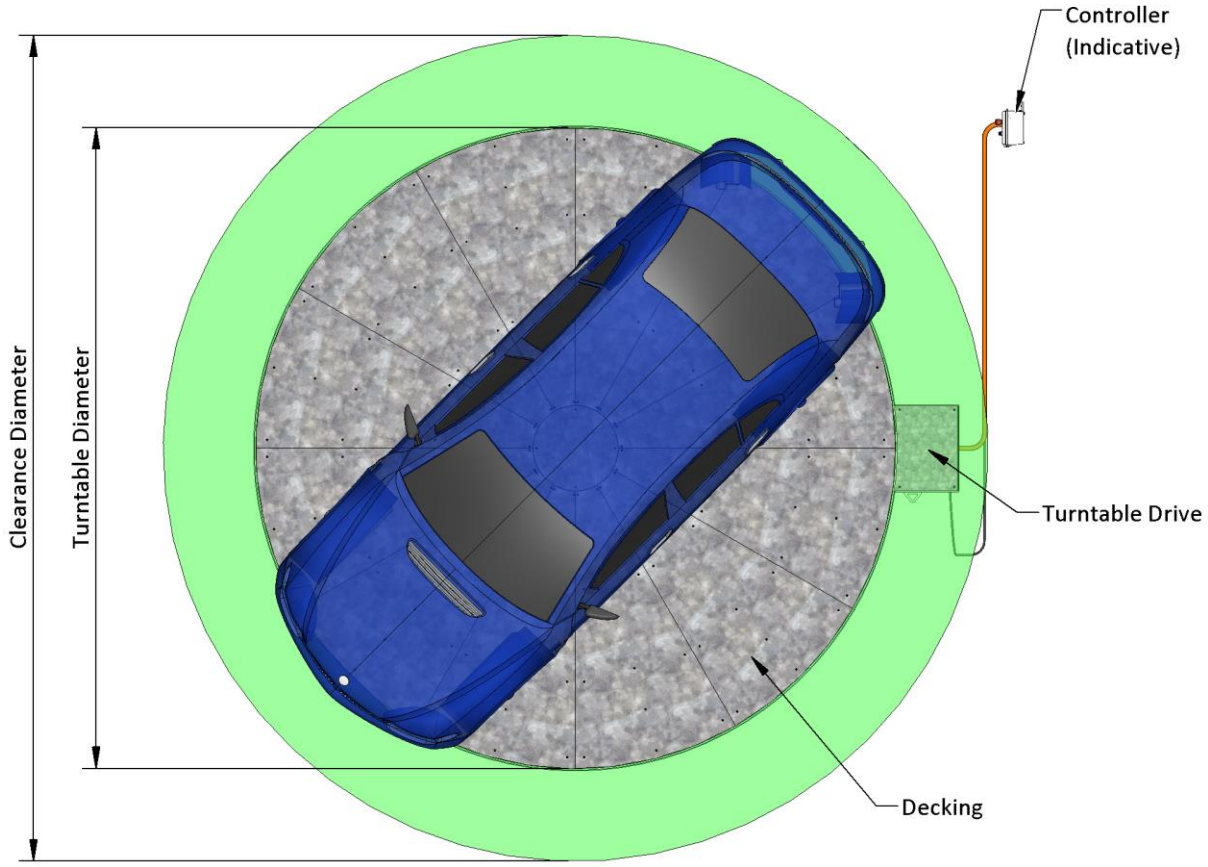
ENGLISH

Certification	
Product Drawing	



APPENDIX 5

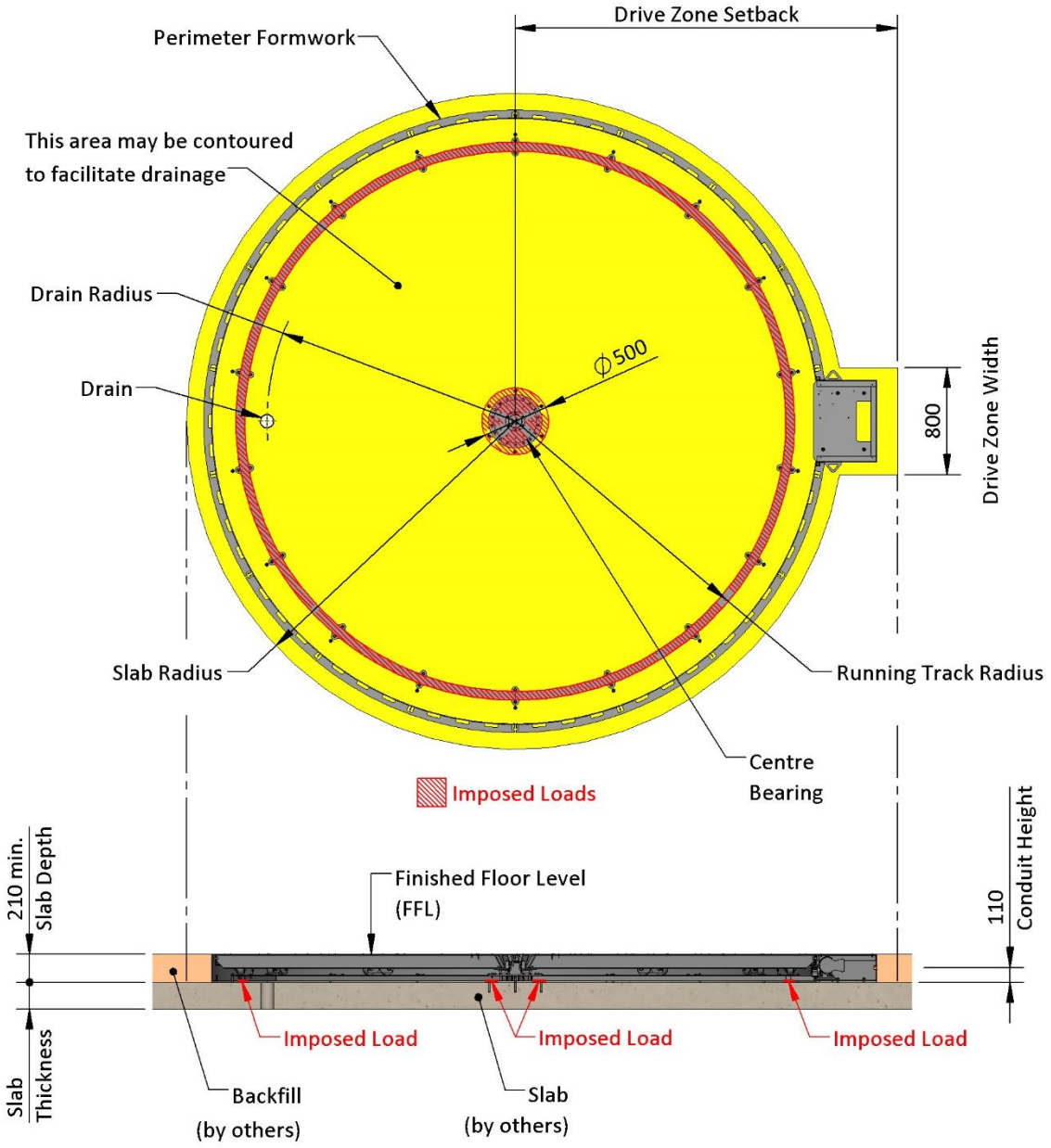
CTX Turntable Specification



**See Specification table for dimensions*

Turntable Overview	
Application:	Driveway, basement, car parking, outdoors
Platform Finish:	Hot dipped galvanised chequer plate – 5mm thick
Inspection Hatches:	Centre bearing and drive. Decking removable for access to Running Track/Drain
Corrosion Protection:	Hot dipped galvanised, zinc coating
Drive Mechanism:	Gear driven powered by motor drive
Custom Platform Finish: *(Optional extra)*	Customised platform options such as timber can be accommodated. Please discuss with ATC
Stainless Steel formwork: *(Optional extra)*	Recommended for projects where a polished concrete finish is specified. This allows the grinding process to be applied to the concrete and the steel formwork without risk of surface rust becoming visible.
Stainless Steel Upgrade: *(Optional extra)*	Stainless-steel upgrade for bearings, shafts and fixings recommended for projects exposed to a salty or corrosive environment.
Safety system: *(Optional extra)*	For projects where there is a chance of collision during rotation with people, building or other vehicles ATC can design and supply a system to reduce risk.
Positional or Home function: *(Optional extra)*	ATC can design and supply any requirements for positional stopping or for the turntable to return to a home position after use. The home position is commonly used on projects with tiled or paver finish.

Turntable Slab



**See Specification table for dimensions*

Slab Overview

1. The turntable slab provides the surface which the turntable is secured to via mechanical fastenings of up to 100mm embedment.
2. The slab size is larger than the turntable to accommodate the perimeter formwork and fixtures.
3. The overall size and shape of the slab can be made to suit the installation site provided it can accommodate the minimum required slab sizes as indicated below.
4. Once the turntable has been installed, a concrete backfill is poured up to the perimeter formwork to encase the turntable into the finished floor.
5. The imposed loads on the slab are concentrated through the Centre Bearing area and the Running track.

AUSTRALIAN TURNTABLES

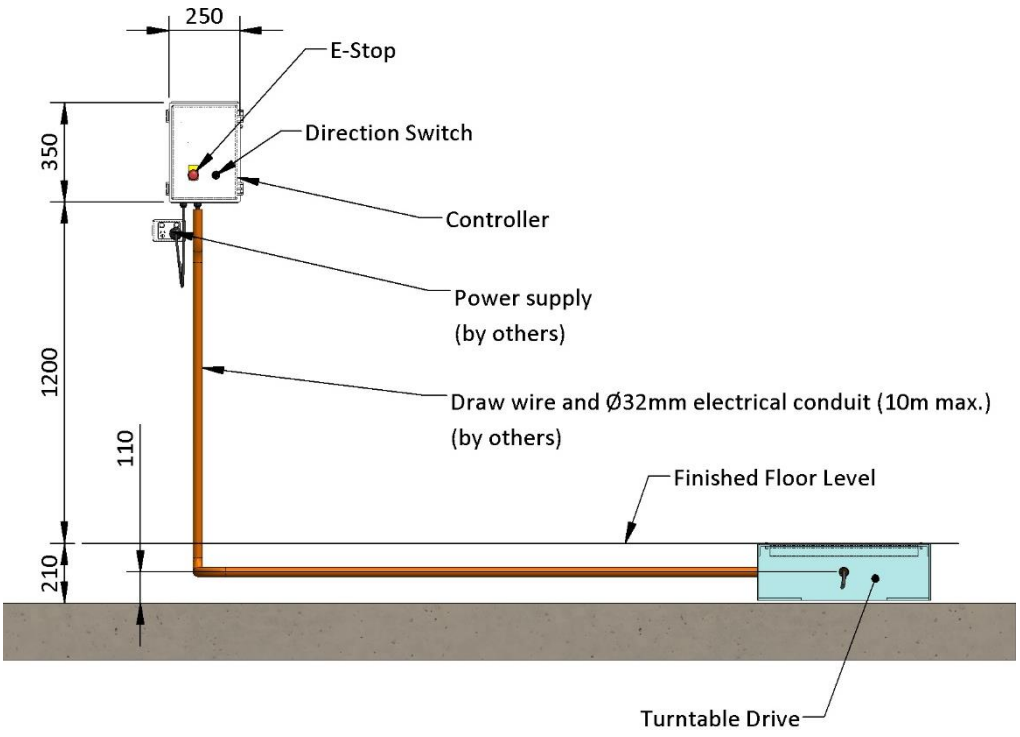
Turntable Specifications

Model	CTX4	CTX45	CTX48
Turntable Diameter (mm)	4000	4500	4800
Vehicle accommodated (1)	B85	B99	B99
Clearance Diameter (mm) (2)	5800	6000	6000
Slab Depth (mm) (3)	210 min.		
Slab Radius (mm)	2200	2450	2600
Drain Radius (mm) (4)	1600	1850	2000
Drive Slab Width (mm)	800	800	800
Drive Slab Setback (mm)	2600	2850	3000
Running Track Radius (mm)	1800	2050	2200
Operating Capacity (kg)	4000		
Operating Speed (Nominal RPM)	1		
Distributed Load Capacity (kPa) (5)	5		
Imposed Load - Centre (kN) (6)	24	29	33
Imposed Load - Running Track (kN/m) (6)	4	5	5
Minimum Concrete strength (MPa) (7)	25		
Slab Thickness (7)	Subject to client engineering		
Recommended Maximum incline (8)	1:12 (5°)		
Working Temperature Range	-10° to + 40° C		

Notes

1. *Vehicle classification AS/NZS 2890.1:2004 Parking facilities - Off-street car parking*
2. *Suggested clearance diameter based on the nominated vehicle positioned correctly on the turntable.*
3. *Slab surface to be steel trowel finished.*
4. *Drainage type and capability is to be specified by the client engineer. Please note grease traps or sump pits are not required specifically for the turntable.*
5. *Structural load capacity to AS/NZS 1170.1, Medium Vehicle. Vehicles exceeding 2500 kg and not exceeding 10,000 kg. Allows for full use of turntable area as a general trafficable area.*
6. *All structural design and imposed loads to AS/NZS 1170.0, Permanent and imposed action. Loads stated are un-factored loads based on the Distributed Load Capacity.*
7. *Slab thickness and strength is to be specified by the client engineer.*
8. *The turntable can be installed on an inclination in any single direction. An installation surcharge will apply. Contact ATC for inclinations greater than this*
9. *If local climate conditions experience temperatures below 0° Celsius, it is a requirement for the pit formwork and motor/gearbox to be heated for outdoor installations (heating to be provided by the customer).*

Electrical & Control



Feature	
Direction of Rotation	Bi-directional
Start-up	Soft start/stop, ramp up/ramp down
Controller	Variable Speed Drive
Operation	Hand held, key-fob remote (5 buttons) and manual switch at control box location
Safety Inclusions	Emergency stop, isolation switch at control box location
Motor Power (kW)	0.37
RCD Type Required (by customer)	Type D
Power Supply Required	AC – 240V 50Hz 10Amps
Minimum Design Standard	AS/NZ 3000
Power Consumption during operation	1 amp