



Traffic Impact Assessment

**Proposed Residential Development
32-36 Lethbridge Street, Penrith**

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1. Introduction

TRAFFIX has been commissioned by Morson Group Pty Ltd to undertake a Traffic Impact Assessment (TIA) to accompany a Development Application (DA), for a proposed residential development at 32-36 Lethbridge Street, Penrith. The DA proposes the demolition of the existing three residential dwellings and construction of a residential flat building comprising 43 apartments.

The development is located within the Penrith City Council Local Government Area (LGA) and has been assessed under that Council's controls. The site is zoned R4 High Density Residential under the provision of the Penrith Local Environmental Plan (LEP) 2010.

This report documents the findings of our investigations and should be read in the context of the Statement of Environmental Effects (SEE) prepared separately. The proposed development comprises of 43 apartments, with the access being further than 90 metres to a classified road. The DA will therefore not require referral to the Roads and Maritime Services (RMS) under the provisions of SEPP (Infrastructure) 2007.

The remainder of this report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking and access requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions



2. Location and Site

The site's address is 32-36 Lethbridge Street, Penrith. It is situated on the southern side of Lethbridge Street between Parker Street and Colless Street. It is also approximately one kilometre west of Kingswood Railway Station and 1.5 kilometres to the Penrith Town Centre.

The site has a northern frontage of 46 metres to Lethbridge Street. It also has an eastern and western boundary of 40 metres and southern boundary of 46 metres neighbouring other residential developments. The site is generally rectangular in configuration with a site area of approximately 1,810m².

The subject site currently accommodates three detached residential dwellings, each with separate domestic driveways onto Lethbridge Street.

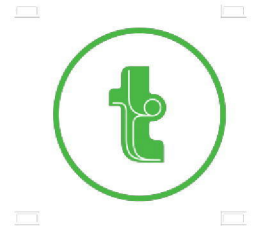
A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**. Reference should also be made to the Photographic Record presented in **Appendix A**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.



Figure 1: Location Plan



Figure 2: Site Plan



3. Existing Traffic Conditions

3.1 Road Hierarchy

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- ➊ Parker Street: an RMS Main Road (MR 154) that generally runs in a north-south direction. Parker Street forms a section of The Northern Road between Oxford Street in the north and Bringelly Road in the south. It carries approximately 41,000 vehicles per a day and is generally subject to a 70km/h speed zoning in the vicinity of the site.
- ➋ Colless Street: a local road that generally runs in a north-south direction connecting to Jamison Road in the south and forming a cul-de-sac in the north. Colless Street is subject to a 50km/h speed zoning, however, 40km/h “School Zone” speed restrictions apply between 8:00am-9:30am and 2:30pm-4:00pm on school days north of the site. It accommodates a single lane of traffic in both direction and permits unrestricted parallel parking along both kerbsides.
- ➌ Lethbridge Street: a local road that generally runs in an east-west direction between Parker Street in the east and Woodriff Street in the west. Lethbridge is subject to a 50km/h speed zoning, however, 40km/h “School Zone” speed restrictions apply between 8:00am-9:30am and 2:30pm-4:00pm on school days between Colless Street in the east and Doonmore Street in the west. It accommodates a single lane of traffic in both direction and permits unrestricted parallel parking along both kerbsides.

It can be seen from **Figure 3** that the site is conveniently located with respect to the arterial and sub-arterial road systems serving the region. It is therefore able to effectively distribute potential residential traffic onto the wider road network, minimising traffic impacts.

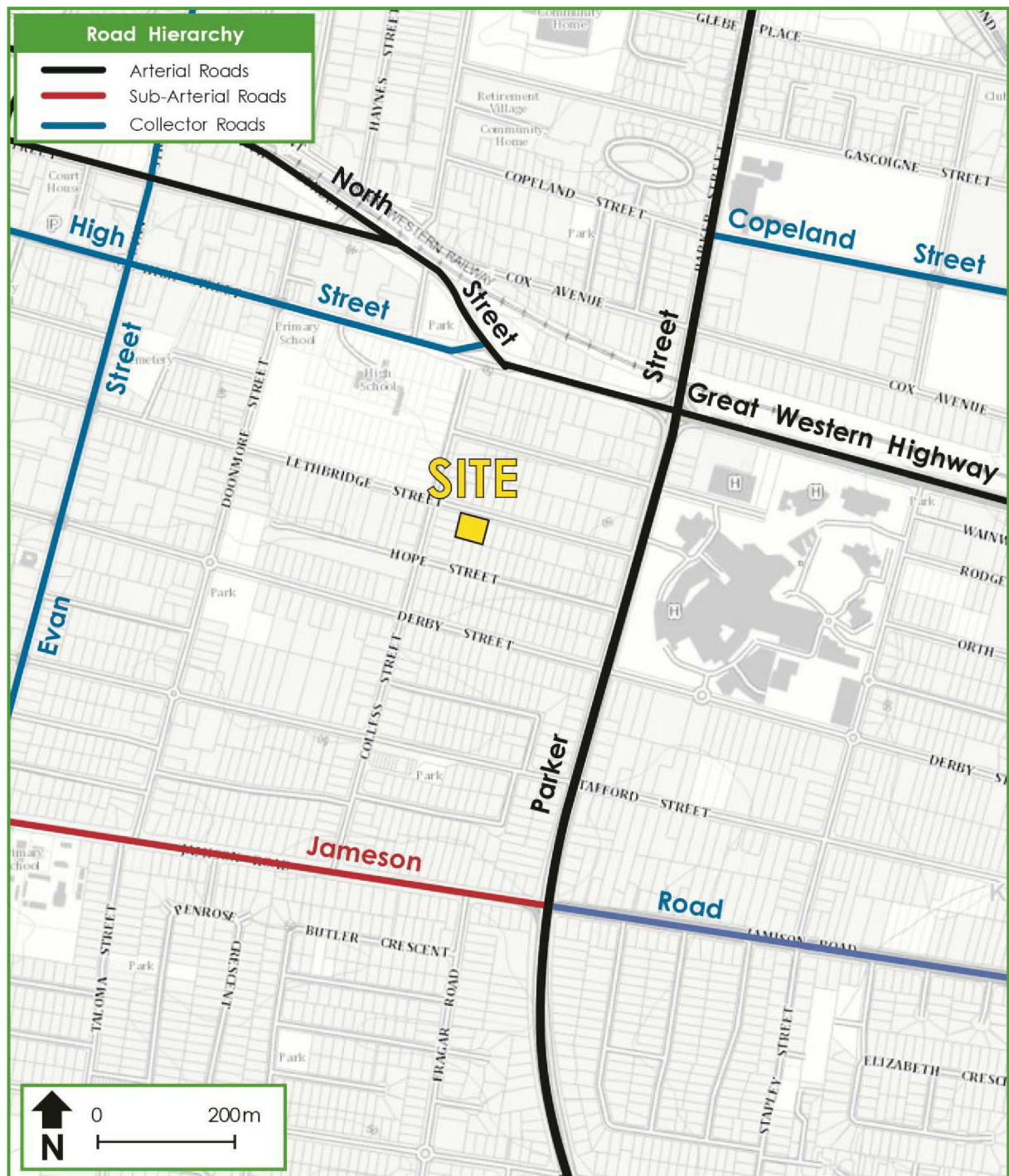


Figure 3: Road Hierarchy



3.2 Public Transport

The site benefits from numerous public transport services that serve the surrounding area. The existing train and bus services that operate in the locality are shown in **Figure 4**. It is evident that the site lies approximately 1 km from Kingswood Railway Station which provides services along the Western Line and Blue Mountains Line including connections to Blacktown, Parramatta, Lidcombe, Strathfield, and the Sydney CBD.

With regard to buses, standard transport planning guidelines state that a development is advantageously located to benefit from bus services if it is within 400 metres walking distance of a bus stop. As Figure 4 shows there are numerous bus stops within a 400 metre walk of the site, providing access to such centres as Penrith, Richmond, Mt Druitt, Oxley Park, Erskine Park, St Clair, Werrington and Cambridge Gardens.

In summary, the site is ideally situated to encourage future residents and visitors to use alternative transport means to access the site.

3.3 Existing Site Generation

As previously mentioned, the subject site is currently occupied by three dwelling houses. Current RMS guidance for low density residential dwellings indicates that the houses would each generate 0.95 and 0.99 peak hour trips in the morning and evening peak hours respectively. By applying these trip rates to the three existing dwelling houses, it is anticipated that the site currently generates approximately three (3) vehicle trips during the morning peak hour (outbound), and three (3) vehicle trips during the evening peak hour (inbound).

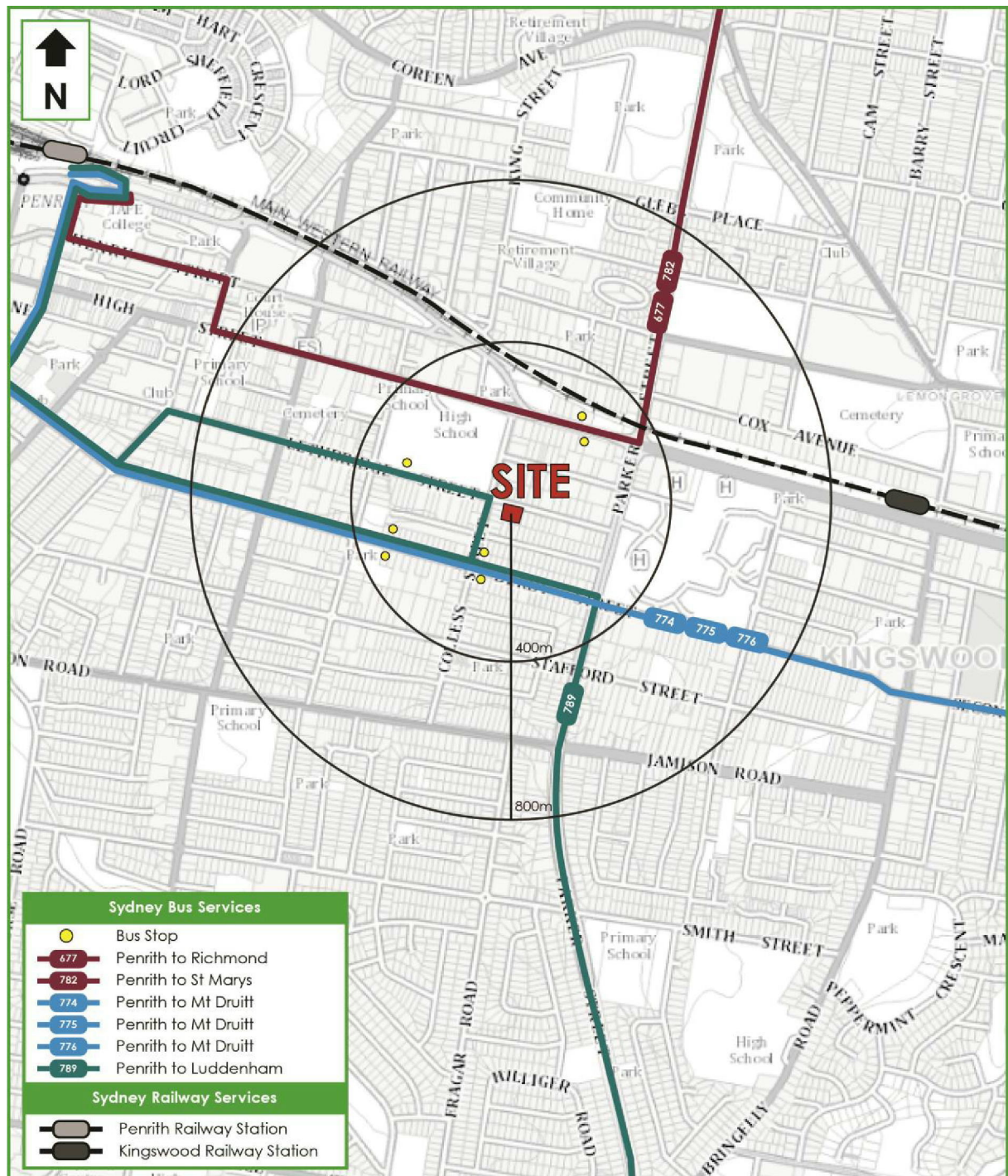


Figure 4: Public Transport



4. Description of Proposed Development

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. In summary, the development for which approval is now sought comprises the following components:

- ➊ Demolition of all existing structures;
- ➋ Construction of a five storey residential flat building containing 43 apartments, consisting of:
 - 1 x one bedroom apartment,
 - 40 x two bedroom apartments; and
 - 2 x three bedroom apartments.
- ➌ Provision of a two level basement car park comprising 54 car parking spaces.
- ➍ Provision of on-street waste collection loading area located in front of the building on Lethbridge Street.

The parking and traffic impacts arising from the development are discussed in Sections 5 and 6, respectively. Reference should be made to the plans submitted separately to Council which are presented at a reduced scale in **Appendix B**.



5. Parking Requirements

5.1 Council Controls

The Penrith City Council Development Control Plan (DCP) Chapter 10 – Transport, Access and Parking (2014), requires parking for the development to be determined at the *minimum* rates shown in **Table 1**:

Table 1: Council Parking Requirements and Provision

Type	Number	Minimum Council Parking Rates	Spaces Required	Spaces Provided
1 Bedroom	1	1 space per unit	1	45
2 Bedroom	40	1 space per unit	40	
3 Bedroom	2	2 spaces per unit	4	
Visitor	43	1 space per 5 units	8	8
Service	43	1 space per 40 units	1	1
Totals			54	54

It can be seen from **Table 1** that the development is required to provide a minimum of 54 car parking spaces, including 45 residential spaces, 8 visitor spaces and a single service parking space. In response, the development provides a total of 54 parking spaces which complies with Council's controls. It is noted that all visitor parking is to locate on the first basement level in a consolidated location for ease of access and use (and will be signposted accordingly for that use only). The proposed car parking provision and allocation therefore satisfies the requirements of Council's DCP and is considered acceptable.

5.2 Accessible Parking

The DCP requires that car parking allocated to adaptable dwellings must comply with the requirements of the relevant Australian Standard regarding parking for people with a disability.

The proposed development includes 4 adaptable apartments which translates into a requirement of 4 accessible parking spaces. In response, 4 accessible parking spaces are proposed which complies with the requirement of the DCP.



5.3 Bicycle Parking

The DCP requires that bicycle parking be provided in accordance with the bicycle parking rates for residential flat buildings in the document “Planning Guidelines for Walking and Cycling”, which have been reproduced in **Table 2** below.

Table 2: Bicycle Parking Rates and Provision

Type	Number / Area	Minimum Council Parking Rates	Spaces Required	Spaces Provided
Residents	43	20-30% of total number of units	9-13	11
Visitors	43	5-10% of total number of units	2-5	
Totals			11-18	11

It is evident that the proposed development requires a minimum of 11 bicycle parking spaces comprising 9 resident (secure) spaces and 2 visitor spaces. In response, the development provides a total of 11 bicycle parking spaces in the form of bicycle rails which complies with the requirement under the *Planning Guidelines for Walking and Cycling*, and is therefore considered acceptable. Furthermore, the bicycle parking spaces are to be designed in accordance with AS 2890.3 (2015).

5.4 Car Wash Bay

The DCP requires one (1) space for car washing be provided for every 50 residential apartments, up to a maximum of four (4) spaces per building. Therefore, the proposed development (with 43 residential apartments) requires a single car wash bay. In response, the development proposes a single car wash bay, which complies with Council’s requirement.

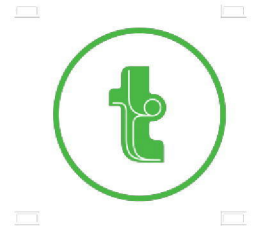
5.5 Servicing and Refuse Collection

The DCP requires residential flat buildings to provide a service vehicle space for every 40 apartments. This translates to a requirement for a minimum of one (1) service vehicle space in the case of the proposed development. In response, the development provides a single service vehicle bay and therefore satisfies the requirements of the DCP. This space comprises a single service vehicle space in the basement car park which can accommodate up to a B99 vehicle.

It is proposed that all waste collection be undertaken kerbside on Lethbridge Street by Council’s waste collection vehicles. A garbage collection / storage room is proposed on Ground Floor fronting Lethbridge



Street, and bins would be transferred to Lethbridge Street for collection. Furthermore, this proposed indent loading bay on Lethbridge Street will ensure that sufficient carriageway width for vehicles to pass a waste collection vehicle will be provided. This bay will accommodate waste collection vehicles up to the size of a 10.5 metre from Lethbridge Street. These access arrangements comply with Clause 3.2.2 of AS 2890.2 (2002) and are considered to be an appropriate arrangement given the conditions of Lethbridge Street (being a local road with low traffic and pedestrian volumes) and having regard for the low frequency of waste collection / truck loading movements.



6. Traffic Impacts

The development is defined as a 'high density residential flat building' which would typically be applicable to an average trip generation rate of 0.19 vehicle trips per unit during AM peak hourly period and 0.15 vehicle trips per unit during PM peak hourly period, under the RMS *Technical Direction TDT 2013/04a*.

Application of the trip rates to the 43 residential units proposed, results in the following predicted trip generation:

- 9 vehicle trips per hour during AM peak period (2 in, 7 out); and
- 7 vehicle trips per hour during PM peak period (5 in, 2 out).

The above traffic volumes are however not a net increase over the existing uses of the site. When accounting for the current dwelling houses on-site, the proposed development is expected to generate the following net increase in traffic over existing conditions:

- 6 vehicle trips per hour during AM peak periods (2 in, 4 out); and
- 4 vehicle trips per hour during PM peak periods (2 in, 2 out).

These traffic volumes equate to a maximum of one (1) additional vehicle trip generated every ten (10) minutes during the morning peak period. This will have no material impact on the performance of the external road network or on the operation of key intersections in the vicinity of the site and accordingly, no external improvements are required to facilitate the propose development. Furthermore, computer modelling techniques available to analyse intersection performances are not sensitive to such small changes. The traffic impacts of the development are therefore considered acceptable.



7. Access & Internal Design Aspects

7.1 Vehicular Access

The development proposes a total of 54 parking spaces with access to Lethbridge Street, a local road. It will therefore require a Category 1 driveway under AS2890.1 (2004), being a combined entry and exit width of 3.0 to 5.5 metres. In response, the development proposes a 6.8 metre wide driveway (kerb-to-kerb), which exceeds the minimum requirements.

A swept path analysis of a B99 vehicle entering and exiting the proposed development has been included in **Appendix C**, demonstrating satisfactory operation of the proposed Lethbridge Street access.

7.2 Internal Design

7.2.1 Design Standards

The internal car park design complies with the requirements of AS 2890.1 (2004) *Part 1: Off-street car parking* and AS 2890.6 (2009) *Part 6: Off-street parking for people with disabilities*, with the following characteristics considered noteworthy:

7.2.2 Parking Modules

- ② All standard car parking spaces have been designed to User Class 1A standards with parking bays 2.4 metres in width, 5.4 metres in length and are provided with a minimum 5.8 metre aisle width, thereby satisfying the requirements of AS 2890.1 (2004).
- ② All accessible parking spaces are designed in accordance with the requirements AS2890.6. Disabled and adaptable spaces will be provided with a minimum width of 2.4 metres with a minimum shared space width of 2.4 metres. It is noted that the shared area is 4.6 metres in length and will be required to be signed off / assessed by an accessibility consultant during CC stage.
- ② All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.



7.2.3 Ramps

- Ramps associated with the basement car park have a maximum gradient of 5% (1 in 20) for the first 6m inside the property boundary in accordance with AS 2890.1 (2004).
- Internally, ramps have a maximum gradient of 25% (1 in 4), with minimum 2.0m long transitions of 12.5% (1 in 8). These provisions satisfy the requirements of AS2890.1 (2004) for a residential car park.

7.2.4 Clear Head heights

- A minimum clear head height of 2.2m is required to be provided for all areas within the basement car park as required by AS 2890.1 (2004).
- A minimum clear head height of 2.5m is required to be provided above all disabled spaces as required by AS 2890.6 (2009).

7.2.5 Service Area Design

- A single service vehicle space has been provided within the basement car park which has been designed with 6.5m long x 3.0m wide parking space, accommodating a vehicle up to the size of a B99 Vehicle.

7.2.6 Other Considerations

- All columns are to be located outside of the parking space design envelope shown in Figure 5.2 of AS 2890.1 (2004).
- Appropriate visual splays are provided in accordance with the requirements of Figure 3.3 of AS 2890.1 (2004) at all accesses.
- A swept path analysis of all critical movements has been undertaken to confirm geometry and compliance with the relevant standards. The swept path assessment is included in Appendix C.

In summary the internal configuration of the basement car park have been designed in accordance with AS 2890.1 (2004) and AS 2890.6 (2009). It is however envisaged that a condition of consent would be imposed requiring compliance with these standards and as such any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.



8. Conclusions

In summary:

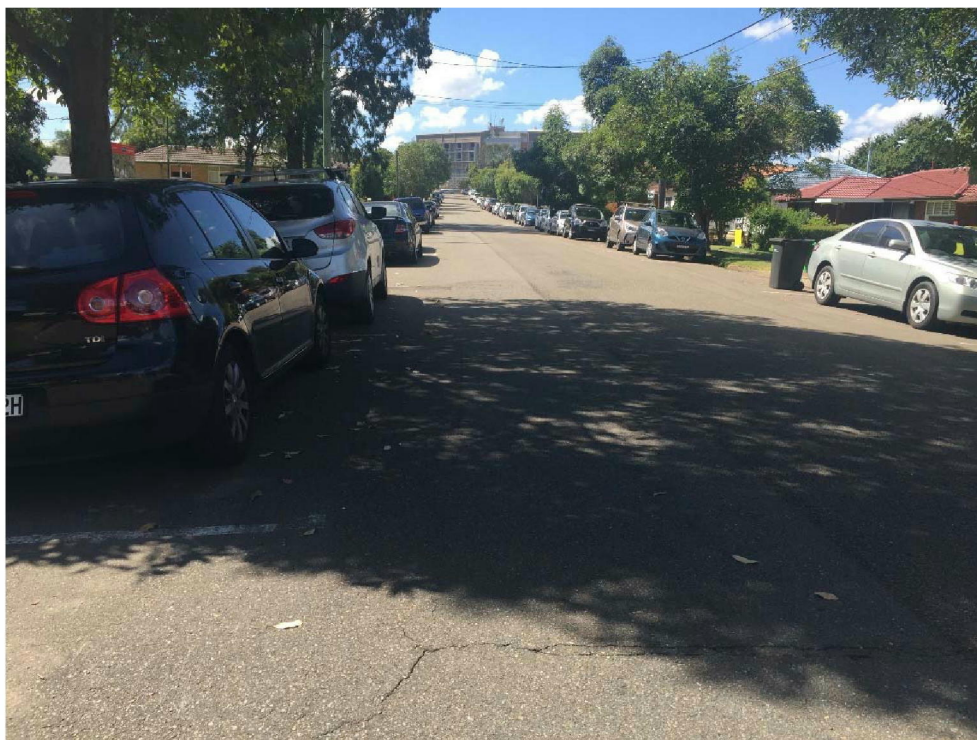
- ➊ The proposal seeks approval to construct a five storey residential flat building at 32-36 Lethbridge Street in Penrith, containing 43 apartments and two levels of basement car parking.
- ➋ The subject site is well connected to the public transport network with reliable access to bus and rail services. These, along with existing and proposed pedestrian and cycle links, ensure the site is ideally situated for a high density residential development as it provides a good opportunity to encourage future tenants / visitors to use alternative transport modes.
- ➌ The traffic generation arising from the development has been assessed as a net increase over existing conditions, and equates to an additional 6 vehicle trips during the AM peak period and 4 vehicle trips per hour during the PM peak period. These traffic volumes equate to a maximum of one (1) additional vehicle trip generated every ten (10) minutes during the morning peak periods. This will have no material impact on the performance of the external road network or on the operation of key intersections in the vicinity of the site and accordingly, no external improvements are required to facilitate the propose development. The traffic impacts of the development are therefore considered acceptable.
- ➍ The proposed development provides 54 parking spaces, including 45 residential parking spaces, 8 visitor parking spaces and a single service vehicle parking space. The proposed car parking provision and allocation satisfies the requirements of Council's DCP and is considered acceptable.
- ➎ The basement car park has been assessed to comply with the requirements of AS 2890.1 (2004) and AS 2890.6 (2009), thereby ensuring safe and efficient operation.

This traffic impact assessment therefore demonstrates that the subject application is supportable on traffic planning grounds.

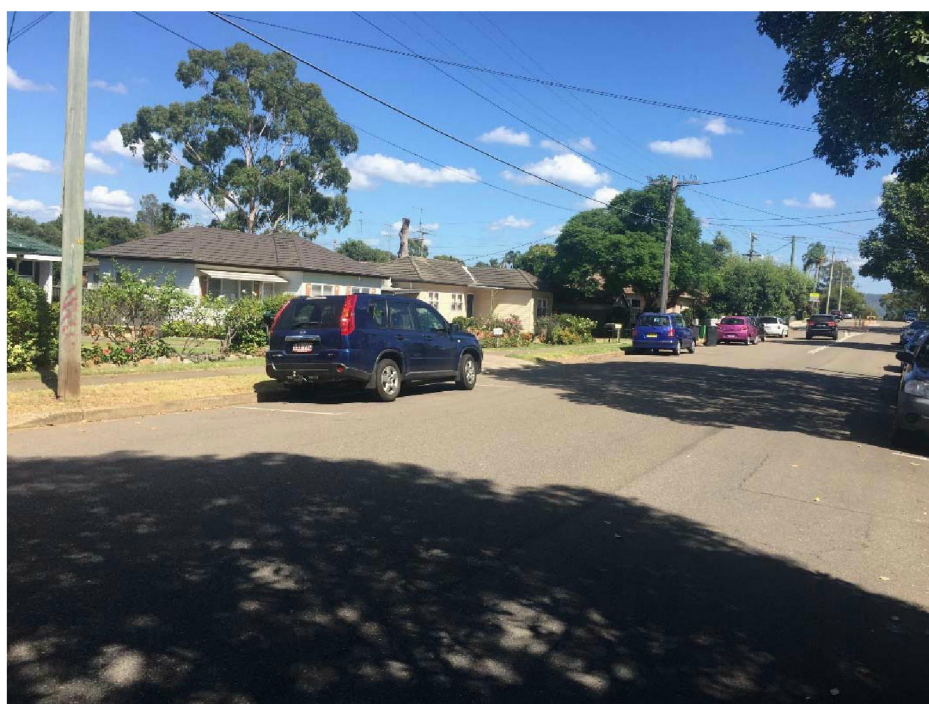


Appendix A

Photographic Record



View looking toward the west along Lethbridge Street



View looking toward the east along Lethbridge Street





View looking toward the site 32 on Lethbridge Street



View looking toward the site 34 on Lethbridge Street





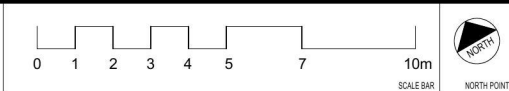
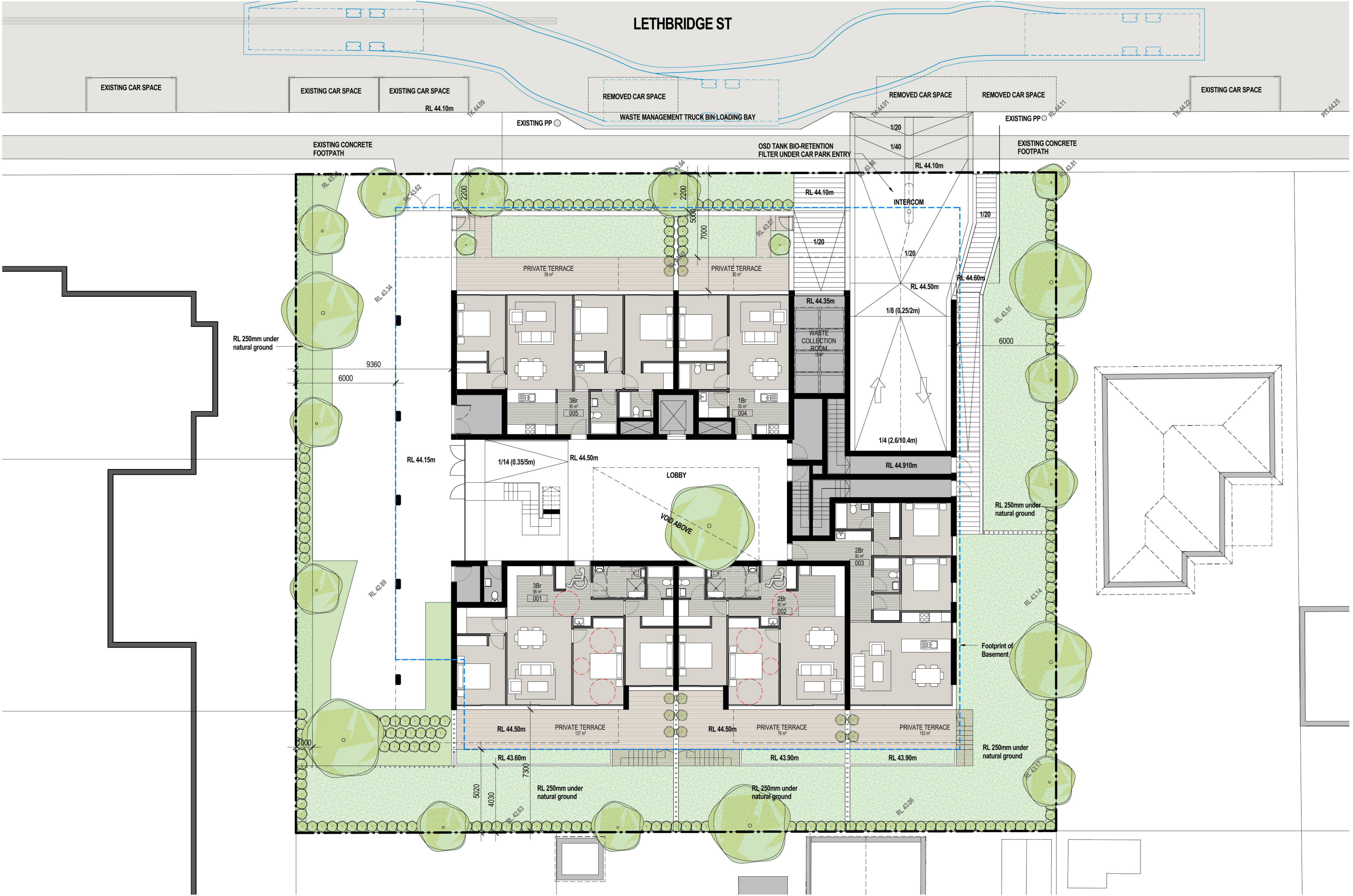
View looking toward the site 36 on Lethbridge Street

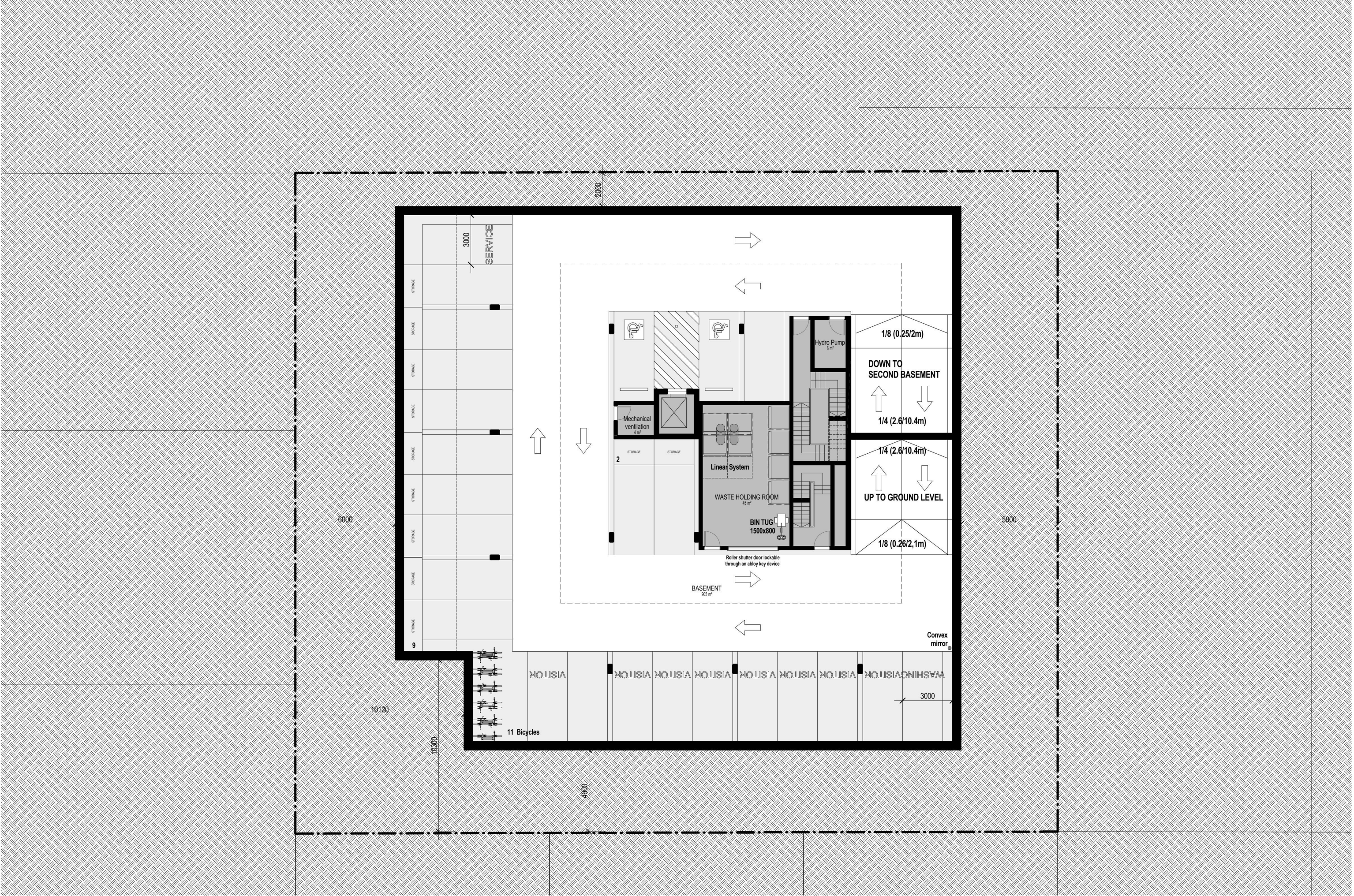


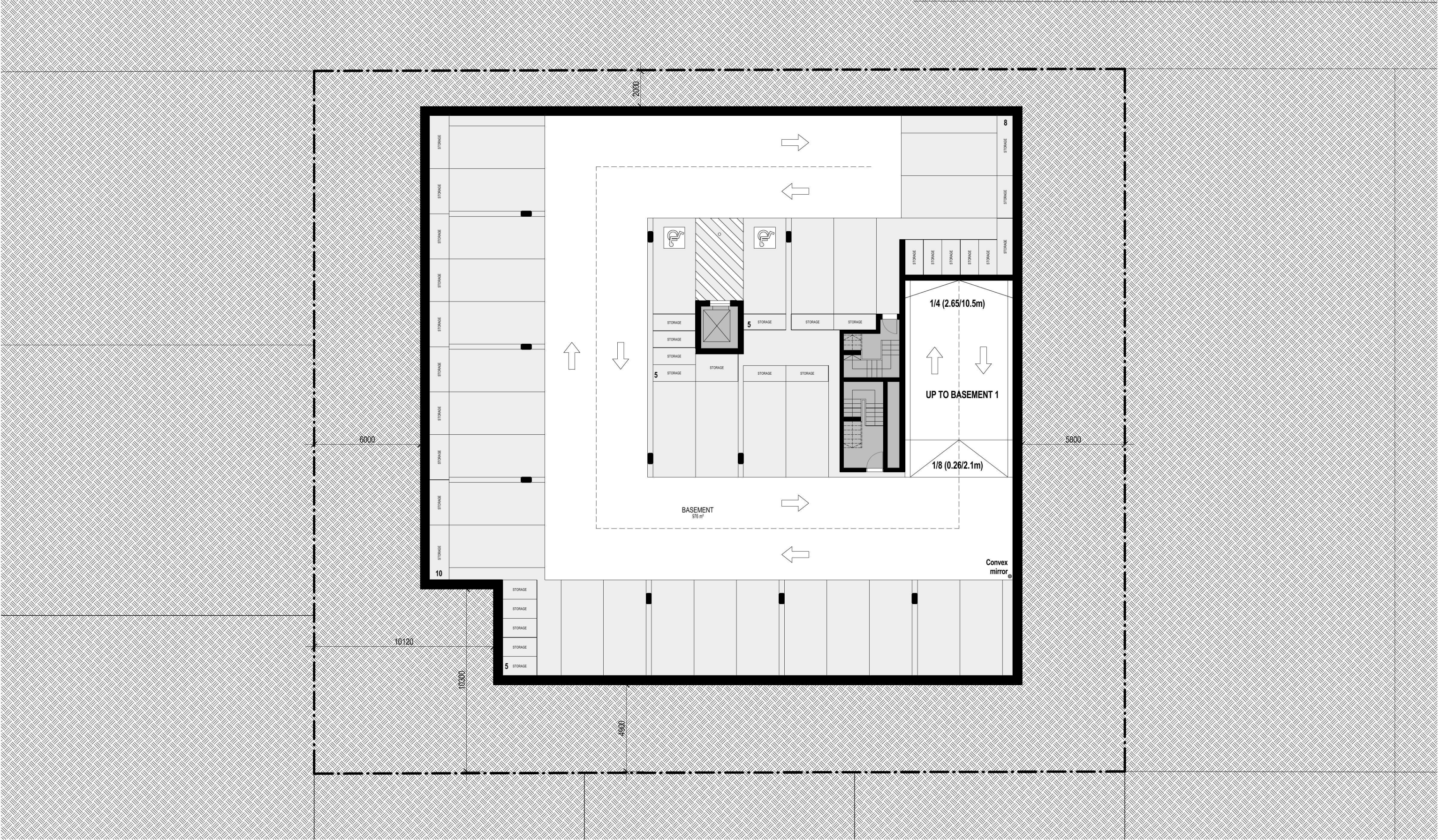


Appendix B

Reduced Plans



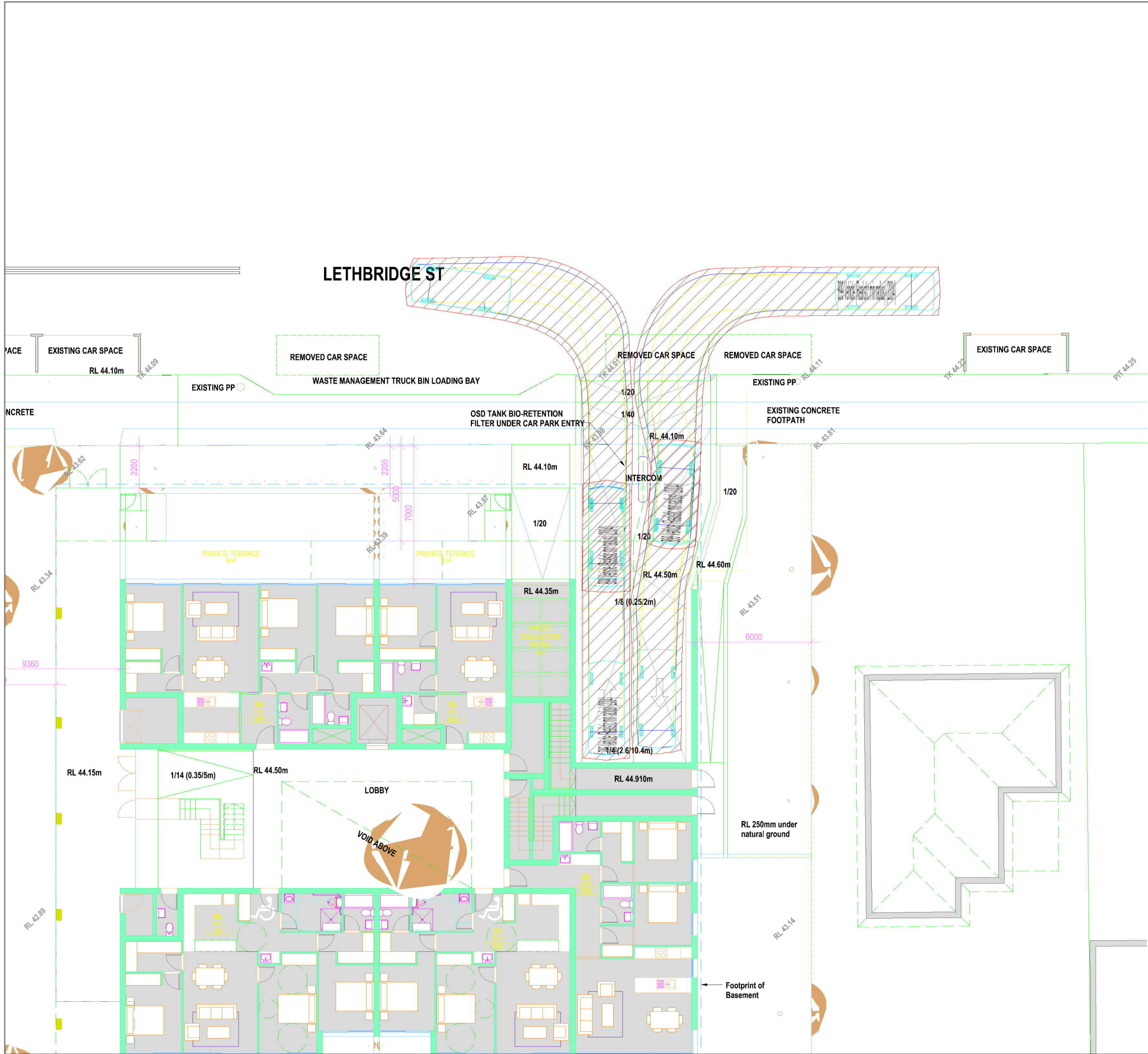






Appendix C

Swept Path Analysis



Notes

This drawing is prepared for information purposes only. It is not to be used for construction.

TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards (AS/NZS 2890.1-2004 *Parking facilities - Off-street car parking*, and/or AS 2890.2-2002 *Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

no. revision note

A Plans & Design Review

B Plans & Design Review

C Plans & Design Review

by. date

HB 09-05-2016

HB 31-05-2016

VD 31-05-2016

Swept Path Legend:

Wheel Path

Vehicle Body Envelope

Clearance Envelope (300mm)

architect

Morson Group Pty. Ltd.

client

scale

1:200 @ A3

0m

2

4

6

8

project

32-36 Lethbridge Street, Penrith

drawing prepared by

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drawing title

Ground Floor
B99 Vehicle
Access Sweep Paths

drawn: HB

checked: VD

date: 09-05-2016

16.083

DA

TX.01

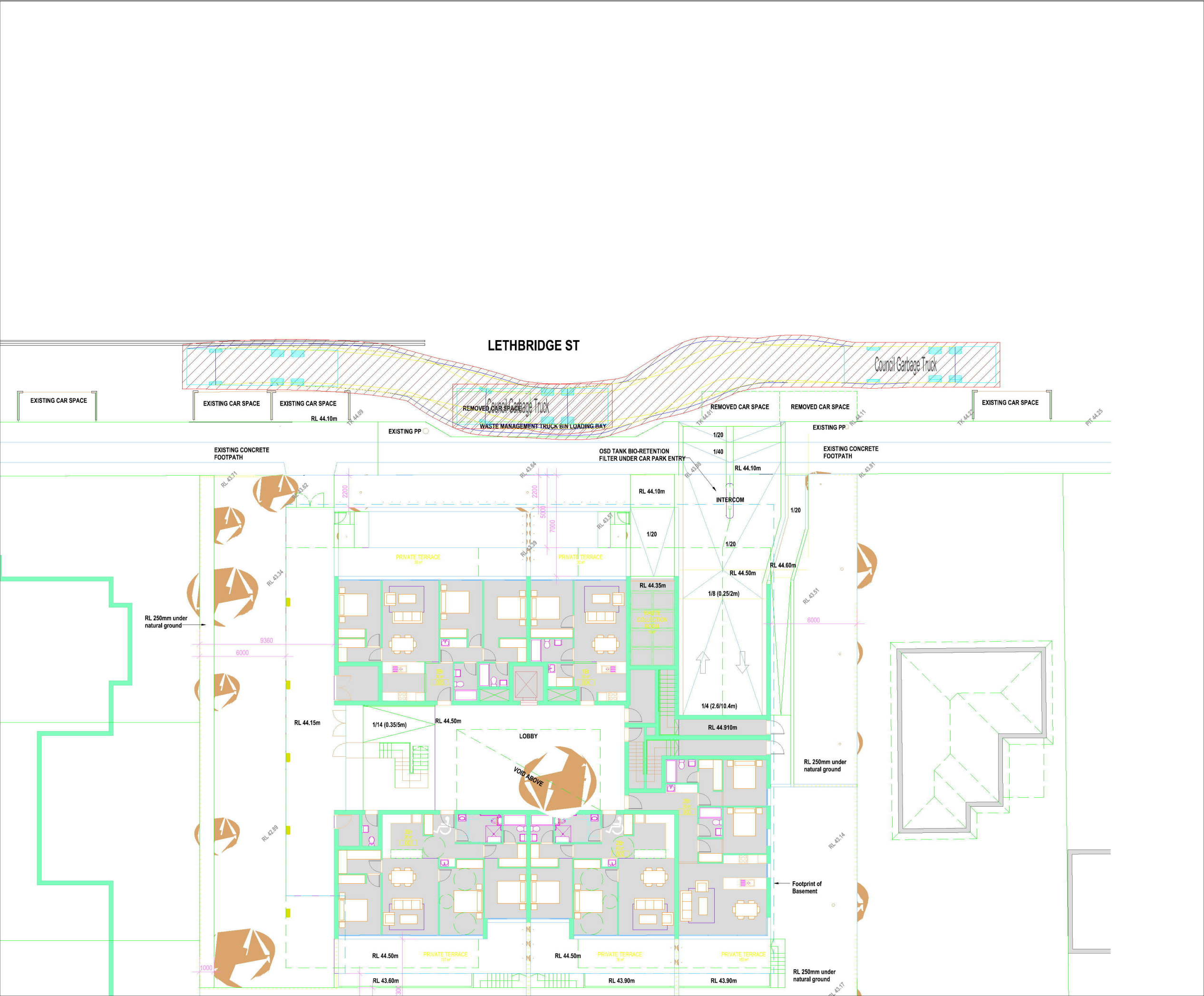
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HB 09-05-2016

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VD 31-05-2016

Swept Path Legend:

Wheel Path

Vehicle Body Envelope

Clearance Envelope (300mm)

architect

Morson Group Pty. Ltd.

client

scale

1:250 @ A3

0m

2

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8

project

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drawing title

Lethbridge Street
10.5m Council Garbage Truck
Swept Paths

drawn: HB

checked: VD

date: 09-05-2016

16.083

DA

TX.02

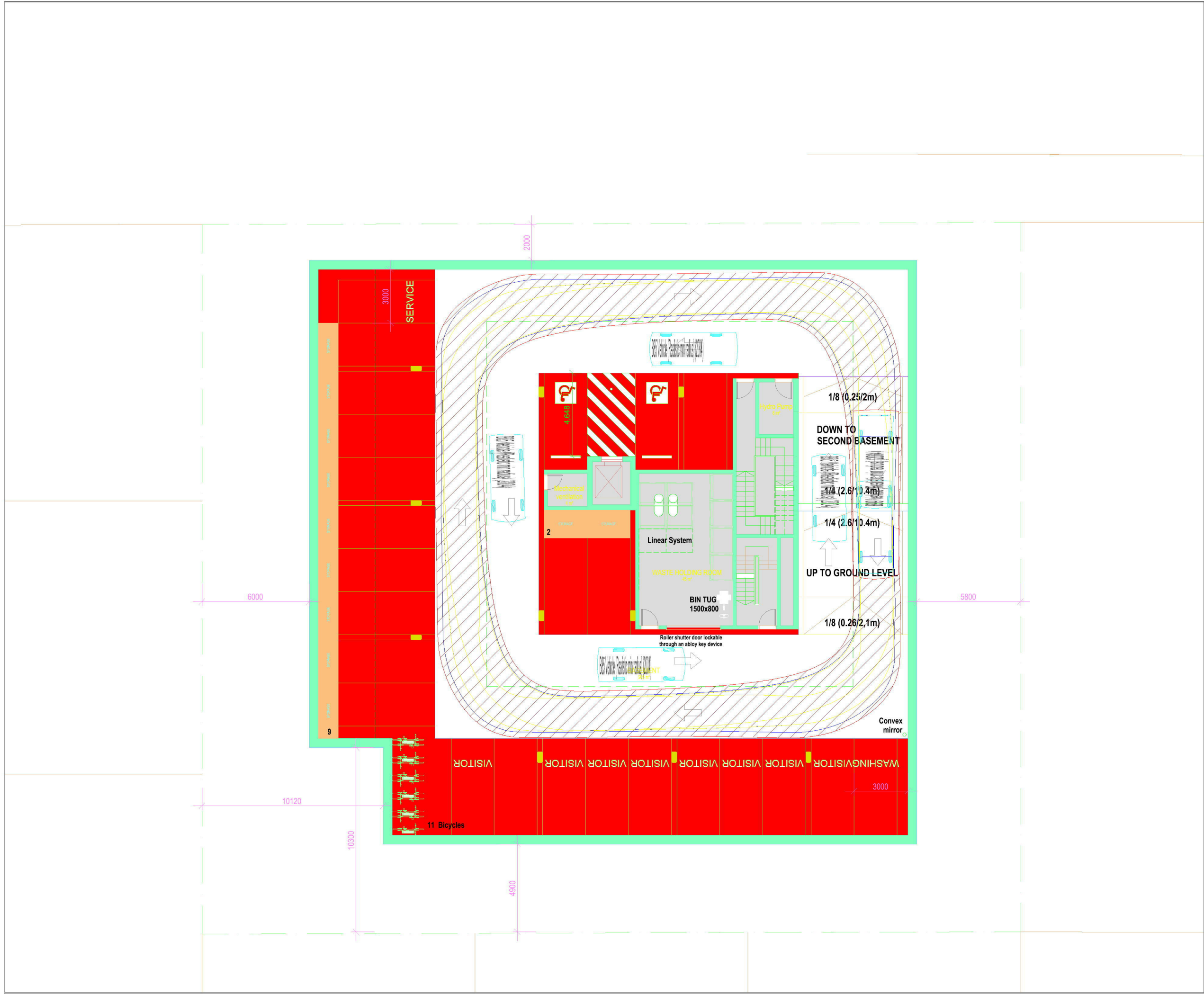
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A	Plans & Design Review	HB	09-05-2016
B	Plans & Design Review	HB	31-05-2016
C	Plans & Design Review	VD	31-05-2016
D	Plans & Design Review	VD	01-06-2016

Swept Path Legend:

Wheel Path

Vehicle Body Envelope

Clearance Envelope (300mm)

architect

Morson Group Pty. Ltd.

client

scale

1:200 @ A3

0m 2 4 6 8

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32-36 Lethbridge Street, Penrith

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drawing title

Basement 01

Design Review and Swept Paths

drawn:	HB	checked:	VD	date:	09-05-2016
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project no.	drawing phase.	drawing no.	rev

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C	Plans & Design Review	VD	31-05-2016

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Wheel Path

Vehicle Body Envelope

Clearance Envelope (300mm)

architect
Morson Group Pty. Ltd.

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scale

1:200 @ A3

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Design Review and Swept Paths

drawn: HB checked: VD date: 09-05-2016

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