

PLANS AND DOCUMENTS
referred to in the ULDA

APPROVAL dated 15 / 4 / 11
~~Proposed Mixed Use Development~~

29 – 35 Campbell Street
Bowen Hills

TRAFFIC ENGINEERING REPORT

Prepared for:
Metro (Bowen Hills No. 2) Pty Ltd

November 2010

Reference: 26707 Trep1

TRAFFIC • PARKING • ACOUSTICS

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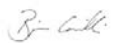
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Table of Contents

1.	Background	1
1.1	Introduction	1
1.2	Site Location	1
2.	The Proposed Development	3
2.1	Development Description	3
2.2	Car Parking	3
2.3	Access Arrangements	3
3.	Existing Conditions	4
3.1	Road Network	4
3.2	Road Planning	4
3.3	Public Transport and Other Road Users	6
4.	Car Parking Arrangements	8
4.1	ULDA Requirement for Car Parking	8
4.2	Proposed Car Park Design	9
5.	Road Network Performance	10
5.1	Traffic Generation	10
6.	Site Access Arrangements	11
6.1	Access Design & Location	11
6.2	Access Ramp Design	11
7.	Service Vehicle Arrangements	12
7.1	Service Vehicle Bays	12
8.	Public Transport, Pedestrian and Bicycle Facilities	13
8.1	Public Transport	13
8.2	ULDA Requirements for Bicycle Facilities	13
9.	Recommendations	14
9.1	Impact on Surrounding Road Network	14
9.2	Development Access	14
9.3	Car Parking Arrangements	14
9.4	Service Vehicle Arrangements	14

9.5	Public Transport and Bicycle / Pedestrian Facilities	14
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Table Index

Table 2.1: Proposed Development Schedule	3
Table 3.1: Local Road Hierarchy	4
Table 3.2: Proposed infrastructure improvements	5
Table 2.3: Rail Services	6
Table 2.4: Timetabling Information for Service No. 301	6
Table 2.5: Timetabling Information for Service No. 320	7
Table 2.6: Timetabling Information for Service No. 393	7
Table 3.3: Parking Provision – BCC CBD Rates	8
Table 8.1: Bicycle Parking Provided as per AustRoads	13

Figure Index

Figure 1.1: Site Location	2
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Appendices

- A Proposed Development Layout
- B Service Vehicle Arrangements

1. Background

1.1 Introduction

TTM Consulting has been engaged by Metro (Bowen Hills No 2) Pty Ltd to prepare a traffic engineering report investigating a proposed mixed use development comprising of residential and retail elements within the Bowen Hills Urban Development Area (UDA). It is understood that a Development Application will be lodged with Urban Land Development Authority (ULDA).

The scope of this report includes an assessment of the following traffic aspects of the development:

- Parking supply;
- Car park layout;
- Access design and location;
- Service vehicle arrangements &
- Bicycle facilities.

The report has been prepared taking cognisance of the *'Bowen Hills Urban Development Area Development Scheme'* and other relevant documentation such as *'Australian Standard AS2890.1:2004'*.

1.2 Site Location

The site is located at Bowen Hills, to the north-east of the Royal National Association (RNA) Showgrounds, as shown in Figure 1.1. The site has road frontages to Campbell Street, Mayne Road and Hazelmount Street, and is currently occupied by several retailers.

The existing land use currently has access driveways on Campbell Street, Mayne Road and Hazelmount Street.

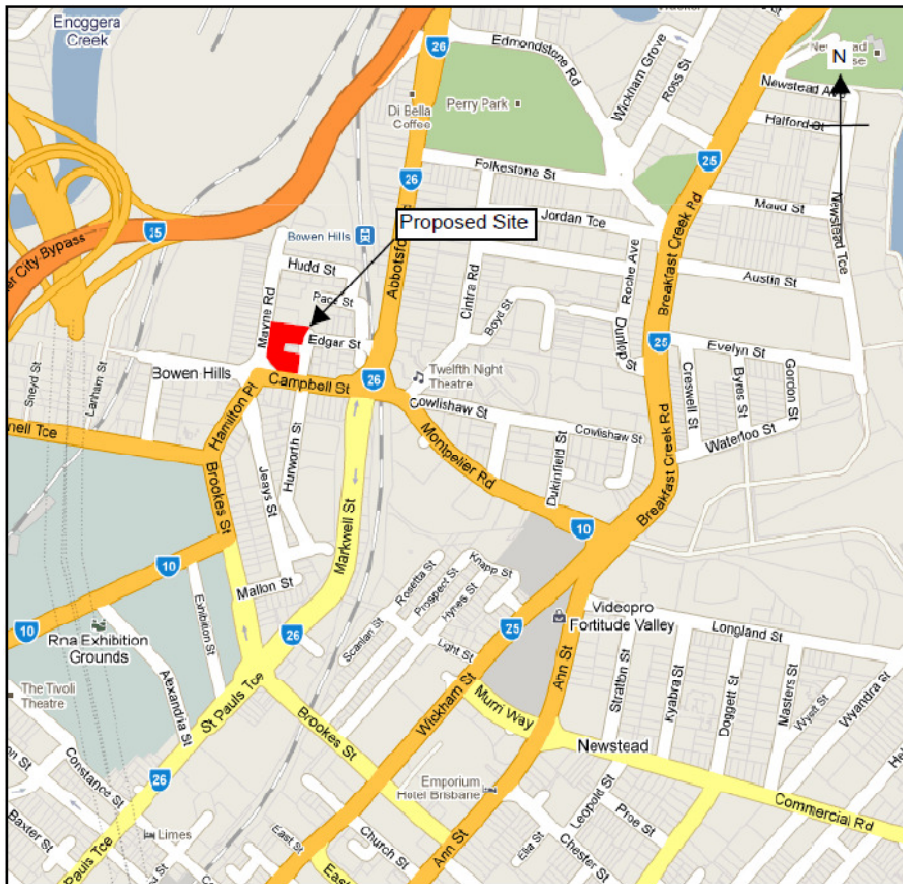


Figure 1.1: Site Location

The site is within Precinct 1 (i.e. Bowen Hills Heart) of the UDA.

2. The Proposed Development

2.1 Development Description

The schedule of accommodation of the proposed scheme is shown in Table 2.1 below.

Table 2.1: Proposed Development Schedule

Type	Number / GFA (m ²)
Residential: One Bedroom	182
Residential: Two Bedroom	104
Residential: Total	286 units
Retail	767m ²

2.2 Car Parking

The development plan also includes 204 parking spaces distributed across two basement levels (131 spaces) and two podium levels (73 spaces).

The development plan also includes 288 bicycle spaces and 14 motorcycle spaces.

All parking provided is intended for the residential component, with no parking allocation for the retail component.

2.3 Access Arrangements

Separate access driveways are provided for the basement and podium level car parks. The driveways are located adjacent to each other on Hazelmount Street.

The northern driveway, which services the basement car park and service vehicle facility, is considered an interim arrangement as it is planned that the ultimate access will be located on the Edgar Street extension constructed through to Mayne Road along the northern boundary of the site. It is expected that the Edgar Lane extension will be constructed when the adjoining site is developed.

Whilst the interim driveway arrangements are not considered desirable, there is no real alternative given the shape of the site. Ideally the sites adjacent to the subject site in Hazelmount Street should have been amalgamated.

3. Existing Conditions

3.1 Road Network

All roads in the immediate vicinity of the site are administered by Brisbane City Council. The hierarchy and characteristics of roads in the immediate vicinity of the site are shown below in Table 3.1.

Table 3.1: Local Road Hierarchy

Road	Carriageway Width	Speed Limit	Lanes	Classification	Management
◀ Campbell Street	12.0m	60kph	4 (undivided)	Suburban Route	BCC
◀ Mayne Road	12.0m	60kph	4 (undivided)	Suburban Route	BCC
◀ Hazelmount Street	5.5m	60kph	2 (undivided)	Local Road	BCC
◀ Edgar Street	3.5m	50kph	1	Local Road	BCC

The intersection of Campbell Street/Mayne Street/Hamilton Street operates under signal control whilst the intersections of Campbell Street/Hazelmount Street, Abbotsford Road/Edgar Street and Hazelmount Street/Edgar Street operate under priority control.

3.2 Road Planning

Table 3.2 summarises infrastructure required to be delivered in order to achieve the ULDA's vision for the Bowen Hills Urban Development Area.

Table 3.2: Proposed infrastructure improvements

Proposed catalyst infrastructure	
Infrastructure	Description of works
Bowen Hills Railway Station	Stage 1 upgrade to improve safety, amenity and visual and physical access from Hudd Street.
Proposed infrastructure improvements	
Infrastructure	Description of works
Road and street improvements	Widening of O'Connell Terrace and public realm improvements.
	Widening of Cambell Street east of Mayne Road through to Abbotsford Road and public realm improvements.
	Widening of Tufton Street and public realm improvements.
	Extension of Tufton Street through to the junction of Mayne Road and Hudd Street.
	Public realm improvements to Brookes Street between Gregory and O'Connell Terraces
	Public realm improvements to Hamilton Place.
	Intersection modifications at the junction of Campbell Street, Hamilton Place and Mayne Road.
	Intersection modifications at the junction of O'Connell Terrace, Hamilton Place and Brookes Street to allow for both lanes from O'Connell Terrace to turn right into Brookes Street.
Transport Infrastructure	Intersection signalisation at the junction of Tufton Street and O'Connell Terrace.
	Upgrades to Bowen Hills Railway Station.
	New bus station linking to the Bowen Hills Railway Station.

In respect to Precinct 1 the ULDA anticipate the following outcomes:

- Hudd Street will be widened on the southern alignment, extended through to Abbotsford Road and developed as a new 'main street'. It will become one of the most important public streets within Bowen Hills due to its proximity to the Bowen Hills Railway Station and new bus facility and the range and intensity of the adjacent uses. It will be an attractive tree lined avenue with generous footpaths to optimise the area available for commercial and pedestrian activity to spill out into the street;
- Hudd Street will accommodate four lanes of vehicle traffic with two-way vehicle movement, a cycle way with median buffer, on-street parking outside of peak traffic periods and bio-retention planting areas;
- Jamieson and Edgar Streets will be realigned and remodelled to create an attractive and pedestrian friendly space through which vehicles are likely to pass but where vehicle speeds will be kept low. A road surface that is flush with adjacent pavements allows for the seamless flow of pedestrians across the street and the inclusion of trees in tree pits maximises the volume of street area available for outdoor commercial use and pedestrian enjoyment; &
- Edgar Street will be extended through to Mayne Road.

The Edgar Street extension through to Mayne Road is considered critical to provide appropriate access to the basement level parking.

The applicant has dedicated land on the Campbell Street frontage to facilitate the future upgrade of the Campbell Street/Mayne Road/Hamilton Place signal controlled intersection. Campbell Street forms part of the entry/exit ramp for the Airport Link, therefore future traffic volumes at this intersection dictate the need to provide protected right turn lanes. The land dedication is based on a concept plan provided by BCC and has been confirmed by the ULDA.

3.3 Public Transport and Other Road Users

Bowen Hills Train Station is located approximately 200m to the north of the site. Services operate every 20-30 minutes (approximately) in all directions. As illustrated in Table 2.3 below the station provides both direct and connecting rail services to Brisbane and the wider South East Queensland (SEQ) region.

Table 2.3: Rail Services

Route	Frequency (Monday to Friday)
AIRP (Varsity Lakes to Brisbane International Airport)	38 daily
BEEN (City to Beenleigh)	54 daily
CABL (City to Caboolture)	56 daily
CLEV (City to Cleveland)	50 daily
DMBN (City to Doomben - Pinkenba – Myrtletown)	33 daily
FERN (City to Ferny Grove)	56 daily
IPSW (City to Ipswich/Rosewood)	68 daily
SHOR (City to Shorncliffe)	43 daily
NAMB (City to Nambour) *	30 daily

* Includes Railbus Service no. 649 (Caboolture to Nambour)

Inspection of timetabling information indicates that Translink services no. 301 (Cultural Centre to Toombul) and 320 (Edward Street to Chermside) operate on Abbotsford Road whilst service no. 393 (Teneriffe Ferry Terminal to Normanby Station) operates on Hamilton Place. A summary of the timetabling information for the bus services is provided in the tables below.

Table 2.4: Timetabling Information for Service No. 301

Day	Cultural Centre to Toombul			Toombul to Cultural Centre		
	First	Last	Frequency	First	Last	Frequency
☛ Monday to Friday	06:40	22:42	29	05:55	22:25	29
☛ Saturdays	07:37	22:42	20	07:30	22:25	19
☛ Sundays & Public Holidays	08:47	19:42	9	08:30	19:25	9

Table 2.5: Timetabling Information for Service No. 320

Day	Edward Street to Chermside			Chermside to Edward Street		
	First	Last	Frequency	First	Last	Frequency
Monday to Friday	06:30	21:35	32	05:17	19:55	32
Saturdays	08:25	17:45	8	07:45	17:05	8
Sundays & Public Holidays	10:35	17:15	6	09:55	16:35	6

Table 2.6: Timetabling Information for Service No. 393

Day	Teneriffe Ferry to Normanby Hotel			Normanby Hotel to Teneriffe Ferry		
	First	Last	Frequency	First	Last	Frequency
Monday to Friday	06:27	17:36	42	06:49	18:06	42

The formal bus stops situated on both Abbotsford Road and Hamilton Place are within a 5 minute (400m) walk of the subject site.

It is therefore considered that the subject site enjoys a high level of connectivity to the public transport network with Bowen Hills train station and bus stops within a convenient walking distance.

The subject site is reasonably well served in terms of pedestrian facilities with footpath provision provided on both sides of Campbell Street and Mayne Street. Formal pedestrian crossing facilities are provided at adjacent signal controlled intersections.

4. Car Parking Arrangements

4.1 ULDA Requirement for Car Parking

Residential

The 'Bowen Hills Urban Development Area Development Scheme' specifies the following parking rate of an average parking provision of 1 space per unit including visitor parking. This relates to an average of 286 spaces.

The total proposed on-site parking supply for the development is 204 spaces (incl. 1 x PWD space) plus 14. motorcycle spaces.

The proposed parking supply rate is based on constraining the commuter traffic generated by the subject site consistent with Transport-Orientated-Development (TOD) principles. The UDA Development Criteria states:

"In support of TOD principles priority should be given to pedestrian, cycle and public transport modes, over private vehicle use".

As mentioned previously, the site is highly accessible to public transport, therefore it is considered appropriate in terms of travel demand management strategies to reduce the overall parking supply and encourage residents to use alternative modes of transport.

It is noted that the ULDA recently approved a similar residential development on Jeays Street (named CODE) with a parking rate of less than one space per unit (0.84 spaces per unit).

TTM consider the Brisbane City Council rate for CBD residential development appropriate for TOD sites such as Bowen Hills. The BCC rate is 0.5 spaces per bedroom plus 1 space per 20 units for visitors. The parking requirement based on the BCC CBD rates is shown in Table 3.3.

Table 3.3 Parking Provision – BCC CBD Rates

Unit Type	Parking Rate	No. of Parking Spaces Required
182 x one bedroom units	0.5 spaces per unit	91
104 x two bedroom units	1.0 spaces per unit	104
Visitors: 286 units	1.0 spaces per 20 no. units	14
Total		209

The proposed parking supply of 204 parking spaces, plus 14 motorcycle spaces, is considered acceptable on the basis of travel demand management principles required to encourage residents to use public transport or walk/cycle as opposed to travelling by private vehicle.

In terms of the location of the visitor spaces, the proposed layout, which is dictated by the shape of the site, is not conducive to providing the 14 accessible visitor bays. It is recommended that the 11 parking spaces immediately north of the ramp to Basement 1 be allocated as visitor parking.

Retail

The car park ratio applicable to retail development in Precinct 1 is a maximum of 1 space per 200m² GFA.

The development plan does not provide any spaces for the retail component, which satisfies the 'maximum' criteria specified by the development criteria.

4.2 Proposed Car Park Design

'Australian Standard AS2890.1:2001' is adopted as a reference for car parking design. The key design parameters in accordance with 'AS 2890.1' are as follows:

Criteria	Minimum Required	Proposed	Comply (Yes or No)
Car Parking Spaces	2.4m x 5.4m	2.4m x 5.4m	Yes
Motorcycle Spaces	1.2m x 2.5m	1.2m x 2.5m	Yes
Parking Aisle	5.8m	5.8m	Yes
Ramp Grades	1:4 (up to 20m)/1:5 (over 20m)	1:4 (up to 20m)/1:5 (over 20m)	Yes

Some sections of the car park have aisles below the required minimum 5.8m. It is recommended that the following modifications be applied to ensure all spaces are accessible:

- Basement 1 & 2 – spaces 15, 24 – 29 allocated as 'Small' bays;
- Basement 1 & 2 – spaces 36, 36 widened to 3.1m each; &
- Level 2 – spaces 26, 27 widened to 3.1m each.

Whilst these parking aisles are currently indicated on the plan as being less than the minimum width of 5.8m, it maybe possible to increase the aisles during the detailed design phase of the project, which would allow the spaces to be retained as standard car parks as shown on the plans.

The podium level car park layouts shows three (3) parallel parking bays (Spaces 20 & 21 on Level 2 and Space 20 on Level 3). These spaces are not compliant, however there is sufficient area in close proximity to these spaces to allow the vehicles to "turn around" to exit the car park in a forward motion. This manoeuvring will not create an adverse impact on the operation of the car park as they are within "dead end" aisles which generate limited traffic flow.

5. Road Network Performance

5.1 Traffic Generation

The proposed development is expected to generate approximately 50vph during the weekday AM and PM peak-hour periods based on a trip generation rate of 0.25vph, which is typical for high density residential accommodation in close proximity to the CBD with constrained parking. On distribution of the development traffic to the road network (Campbell Street, O'Connell Terrace, Markwell Street, Brooke Street, Hamilton Place, St Pauls Terrace) the impact will be negligible, thus not warranting a traffic impact assessment.

A majority of the proposed road improvement works summarised in Table 3.1 in the area has been devised to accommodate the traffic demands for development across the entire Bowen Hills UDA.

6. Site Access Arrangements

6.1 Access Design & Location

As stated previously, the access arrangements indicated on the development plan are considered an interim arrangement. The northern driveway will be re-located to the Edgar Lane extension (which could be operational prior to the completion of the development).

The southern driveway on Hazelmount Street provides access to the podium level car park, which has a capacity of 73 spaces. A Category 1 driveway is therefore required in accordance with Table 3.1 of AS2890.1. A Category 1 driveway requires a total width of 3.0m – 5.5m in accordance with Table 3.2 of AS2890.1. The proposed driveway of 5.5m satisfies this requirement.

A Category 2 driveway is required to service the basement car park and the service vehicle area. A Category 2 driveway requires a total width of between 6.0m – 9.0m. The proposed driveway as shown on the development plan does not satisfy this requirement. The proposed width is only 5.0m, which is only sufficient to accommodate one-way traffic flow. It is proposed that a signal system (flashing lights) be installed at the entry to avoid a situation whereby a vehicle is entering whilst another vehicle is exiting. This arrangement is only required until the driveway is relocated to the Edgar Lane extension.

6.2 Access Ramp Design

The access ramp from Hazelmount Street up to the podium level car park is designed in accordance with AS2890.1. For driveways with the following criteria, a 1 in 8 grade for the first 6.0m is acceptable in accordance with Section 3.3 of AS2890.1:

- The grade is a downgrade for traffic leaving the property;
- The user Class is Class 1, 1A or 2 only; &
- For entry from a local road the maximum car park capacity is 100 spaces.

The interim access ramp to the basement car park has a maximum grade of 1 in 20, which is compliant with the standards.

7. Service Vehicle Arrangements

7.1 Service Vehicle Bays

The service vehicle facility needs to accommodate the demands generated by the retail and residential components of the development.

Retail

The BCC TAPS Policy is the best guide to determine service vehicle bays required. The TAPS Policy requires the following:

- 1x Van
- 1 x SRV
- 1 x MRV

The development requires occasional access by a furniture trucks and Refuse Collection Vehicles. Considering the small size of units an MRV will be sufficient for furniture removal.

Residential

A significant proportion of the units within the development are classified as 'small' (i.e. <75m²) and are targeted at the investor market, which relates to a high proportion of rental units. Whilst this may relate to a higher turn-over of tenants, these tenants typically have lower volumes of furniture to move in/out of the unit, therefore utes and vans are typically used as opposed to the large trucks in order to minimise cost.

It is possible to manage the furniture trucks in a manner that controls the size of the vehicle accessing the site and also time at which the residents move in/out of the development. The building manager allocates a specific time period to the tenants to lock off a lift and use the service vehicle bay. On this basis, it is TTM's view that an MRV is the appropriate design vehicle for the furniture truck and that the ability to schedule the timing of the trucks allows for the sharing of the retail MRV bay.

All service vehicles can enter and exit the site in a forward motion. It is noted that service vehicles will be required to reverse into the bays at the top of the ramp within the path of traffic entering the basement car park, however the potential for conflict is considered minimal given the tidal flow of traffic and the infrequency of service vehicles. The inbound traffic flow will typically peak after 5pm on weekdays, after servicing is finished, thus avoiding any significant conflict.

The service vehicle layout will also need to be modified when the access relocates to Edgar Lane. The MRV bay will switch to the opposite side of the access, essentially in the location of the current driveway from Hazelmount Street.

8. Public Transport, Pedestrian and Bicycle Facilities

8.1 Public Transport

Existing bus stop facilities on Campbell Street and in front of the proposed development (this must be clarified) are considered adequate for the needs of the development.

As part of Bowen Hills Urban Development Plan the Bowen Hills Train Station will be upgraded to improve safety, visual and physical access from Hudd Street.

In addition a new busway station linking to the Bowen Hills Train Station is also proposed as part of the urban development.

With all of these infrastructure upgrade works public transport services will be able to cater for the needs of the residents.

8.2 ULDA Requirements for Bicycle Facilities

The UDA development criteria specifies bicycle facility targets for residential development, which are as follows:

- ❖ *Residents: One secure bicycle space per unit according to AS2890.3*
- ❖ *Visitors: One space per 400m² GFA according to AS2890.3*

In reviewing AS2890.3 it is noted that the standard does not specify parking rates for bicycles.

The generally accepted guide for determining bicycle facilities is the 'AustRoads Part 14-Bicycles'. Table 8.1 summarises the AustRoads bicycle parking requirement.

Table 8.1: Bicycle Parking Provided as per AustRoads

Land Use	Category	Council's Rate	Spaces Required
Residential	Tenants	1 per 4 units	72
	Visitor	1 per 16 units	18
Retail	Visitor	10 spaces minimum	10
Total			100 spaces

The development plan currently proposes 288 bicycle spaces (1.0 spaces per unit), which is considered a desirable design outcome in terms of maximising the potential for residents to cycle as opposed to travelling by private vehicle, and is well in excess of the recommended parking supply in accordance with Austroads Part 14.

9. Recommendations

9.1 Impact on Surrounding Road Network

It is concluded that the traffic generated from the proposed development will have a negligible impact upon the adjacent road network, and as such, TTM do not believe that a detailed impact analysis is necessary.

9.2 Development Access

The driveway located on Hazelmount Street servicing the podium level car park (southern driveway) complies with AS2890.1.

The northern driveway, which services the basement car park, is only 5.0m wide, which is only suitable for a one lane, two-way operation. Signage, linemarking and warning lights are recommended for the access to ensure there are no conflicts. The northern driveway is only an interim arrangement, as the driveway will be relocated to the Edgar Lane extension when the adjoining development progresses.

9.3 Car Parking Arrangements

The development proposal incorporates 204 parking spaces and 14 motorcycle spaces.

The proposed parking supply is based on constraining the commuter traffic generated by the subject site and is consistent with TOD principles.

It is recommended that the car park layout be modified as described in Section 4.2 to ensure all spaces are accessible.

9.4 Service Vehicle Arrangements

The proposed service vehicle facilities are considered acceptable to service the demands for both the retail and the residential components of the development.

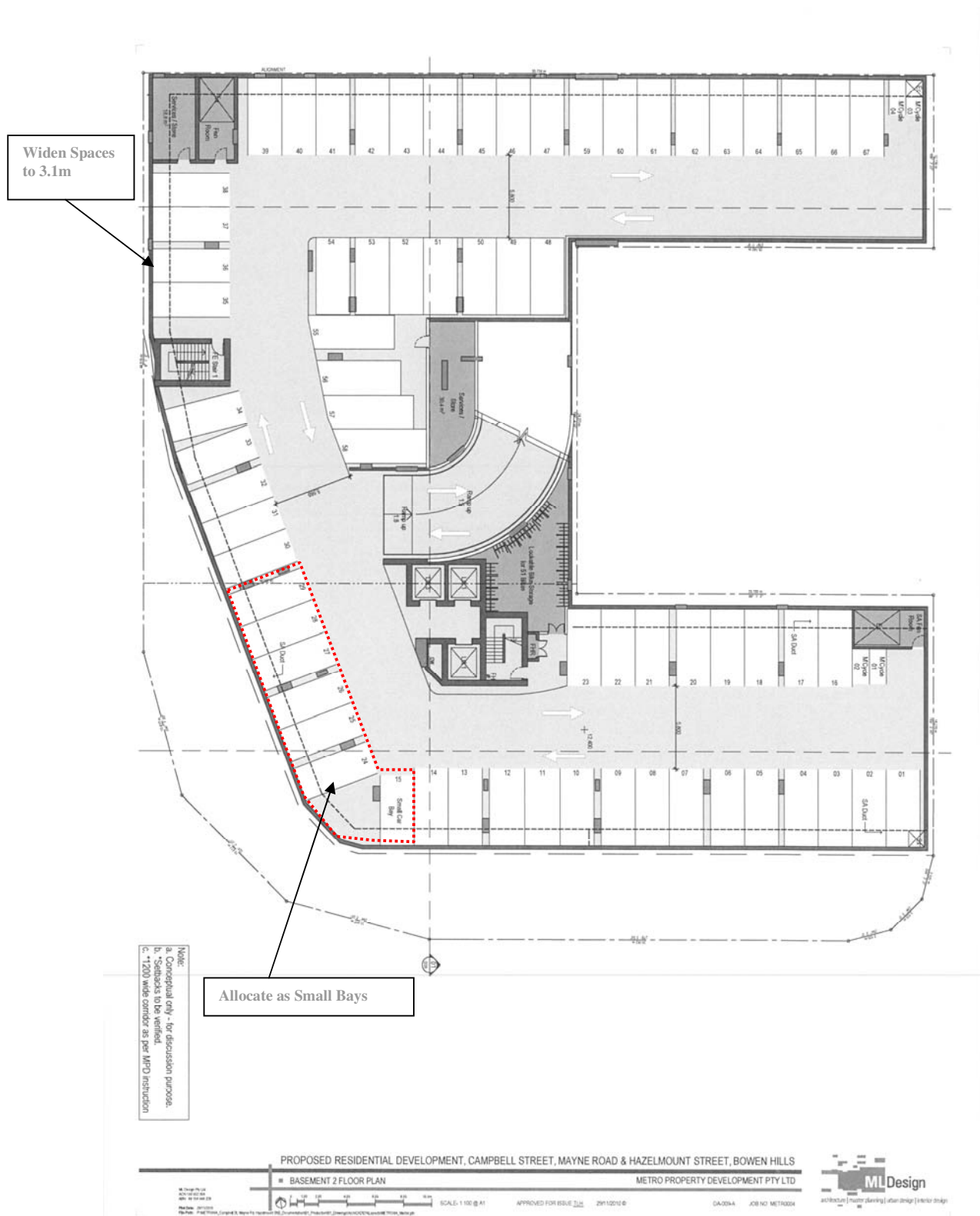
9.5 Public Transport and Bicycle / Pedestrian Facilities

The site is well located in terms of providing a high level of accessibility to public transport, with the Bowen Hills Train Station and RBWH Busway station within walking distance of the site. This reinforces the proposal to constrain resident car parking and encourage residents to use public transport.

The bicycle facilities provided on-site are well in excess of the minimum requirements of the Austroads Part 14, which is considered appropriate based on the constrained car park supply and the need to encourage residents to use alternative modes of transport.

Appendix A

PROPOSED DEVELOPMENT LAYOUT



Widen Spaces
to 3.1m

Allocate as Small Bays

Note:
a. Conceptual only - for discussion purposes.
b. Setbacks to be verified.
c. *1200 wide corridor as per LPRD instruction

PROPOSED RESIDENTIAL DEVELOPMENT, CAMPBELL STREET, MAYNE ROAD & HAZELMOUNT STREET, BOWEN HILLS

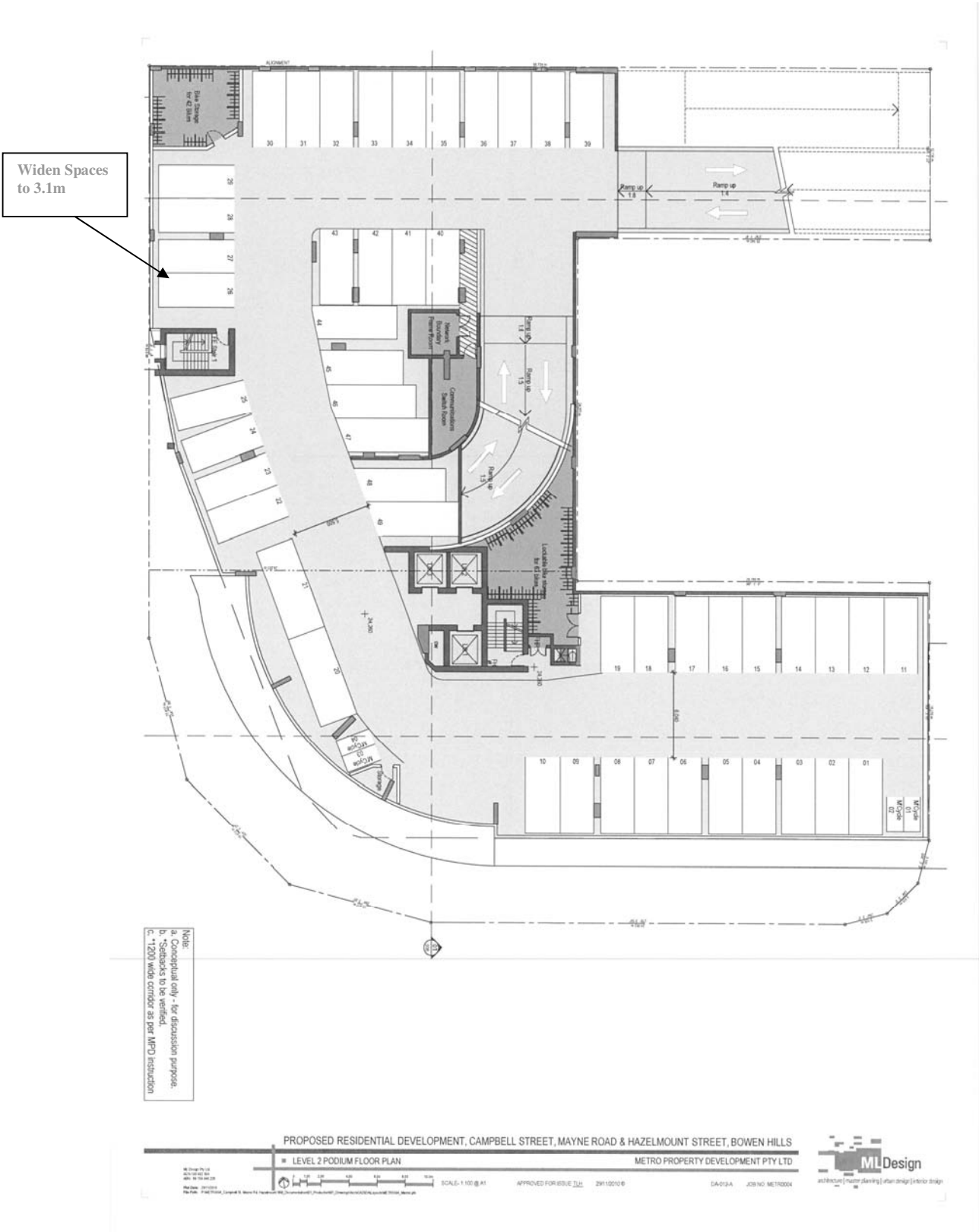
BASEMENT 1 FLOOR PLAN

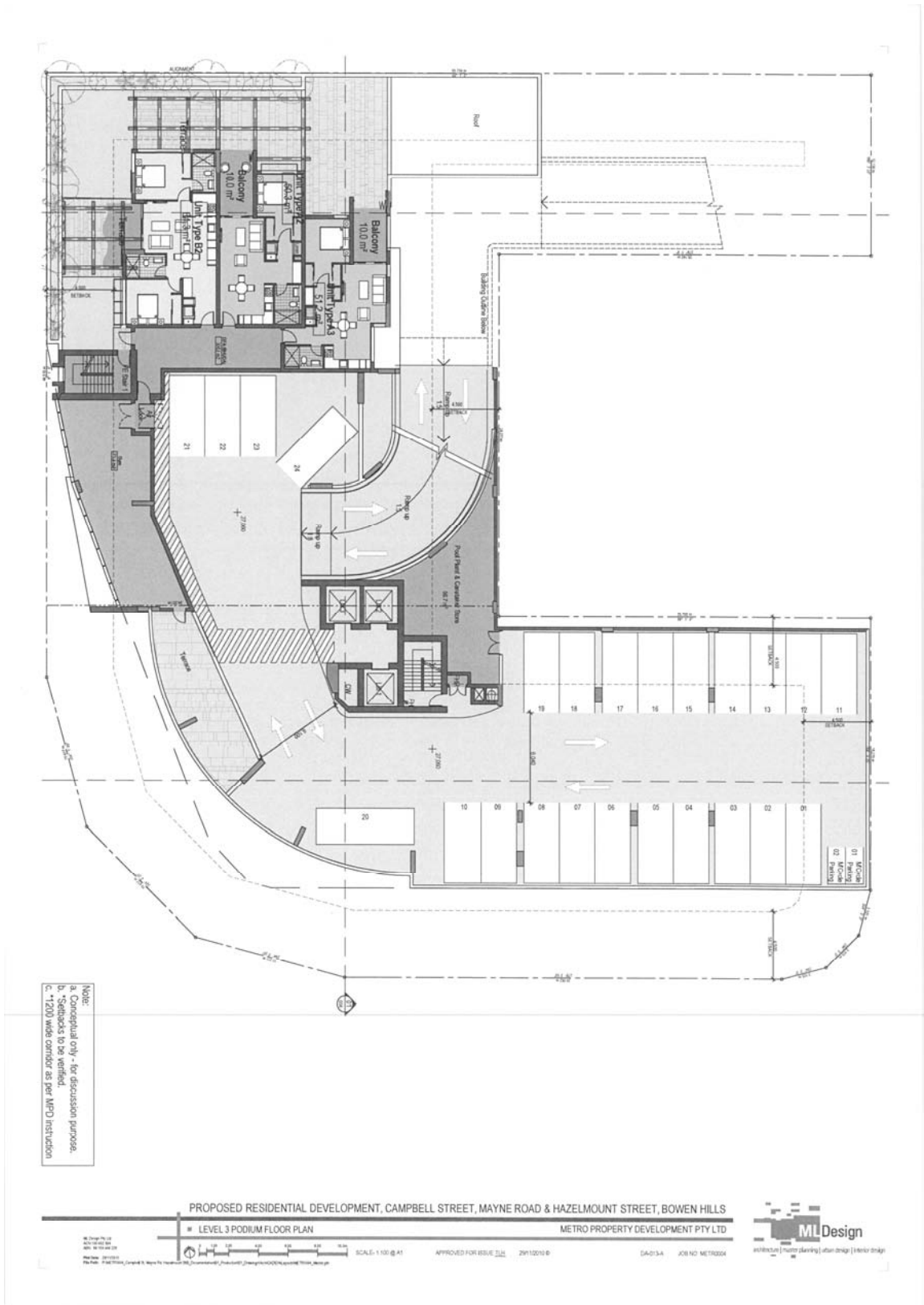
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DATE: 20/10/10

ML Design
ARCHITECT | PLANNING | INTERIOR DESIGN | LANDSCAPE ARCHITECTURE







Appendix B

SERVICE VEHICLE ARRANGEMENTS

