Traffic Impact Assessment

SCEGGS Masterplan 2040 – Request for SEARS
165 – 215 Forbes Street, Darlinghurst

Reference: 17.312r01v03

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Contents

1. Introduction

TRAFFIX has been commissioned by Tanner Kibble Denton Pty Ltd to undertake a traffic impact statement in support of a request for SEARS for Stage 1 DA and Concept Masterplan for the Sydney Church of England Grammar School. The Master Plan is a State Significant Development and includes the demolition of existing structures and provision of new buildings as well as the refurbishments of existing buildings.

This report documents the findings of our investigations and an additional Transport Impact Assessment will be provided with the Environmental Impact Statement to be lodged with the State Significant Development DA.

The 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 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 is located at 165 - 215 Forbes Street, Darlinghurst, approximately 400m south west of Kings Cross Railway Station. More specifically, it is situated on the eastern side of Forbes Street, between its intersection with St Peters Lane and Clapton Place.

The site is irregular in configuration having a total area of approximately 13,676m2. It has an eastern street frontage onto Forbes Street, a northern street frontage to St Peters Lane, a western street frontage to Bourke Street and a southern frontage to neighbouring residential properties.

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.

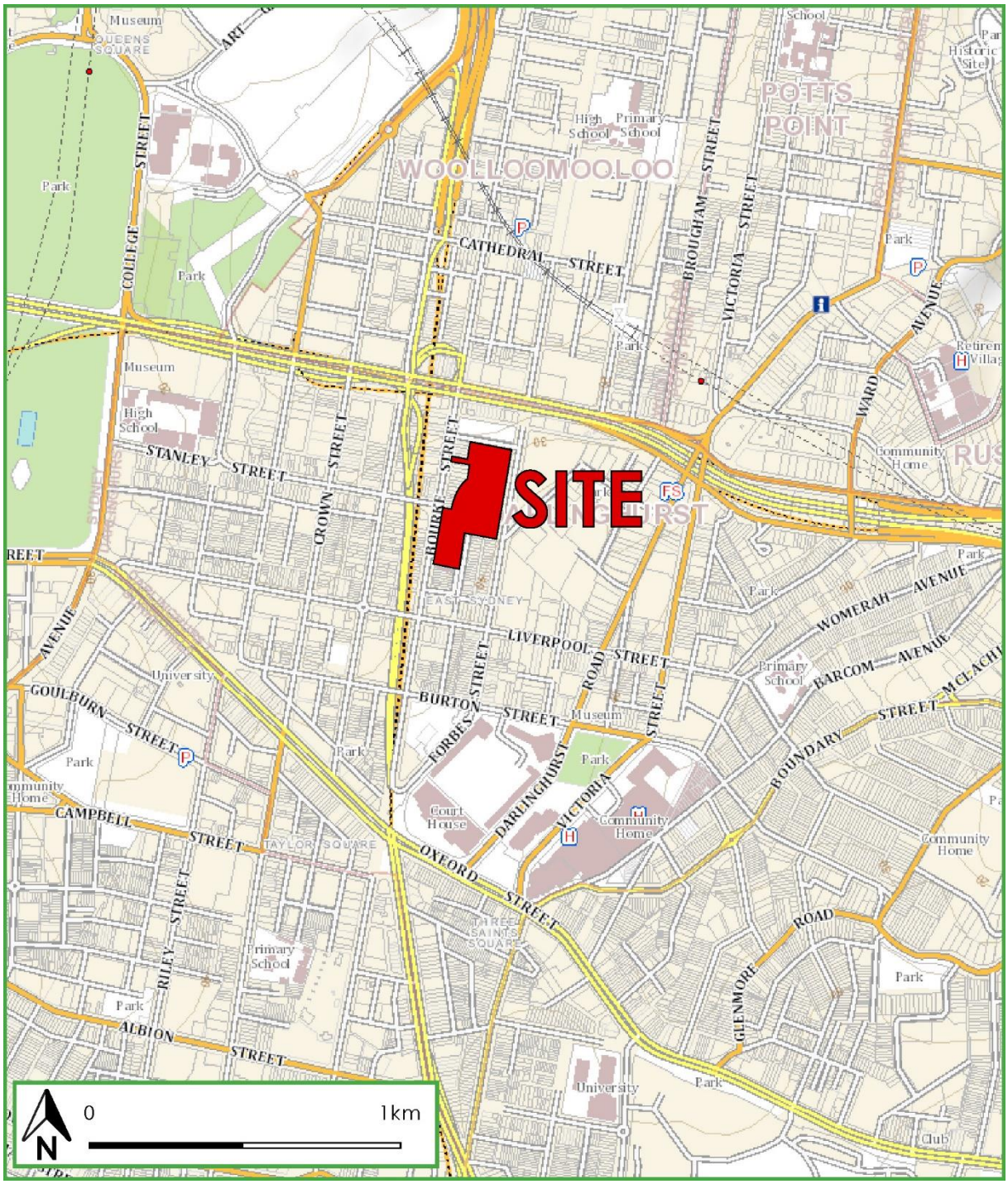


Figure 1: Location Plan

Figure 2: Site Plan

3. Existing Traffic Conditions

3.1 Road Network

The site is conveniently located with respect to the arterial road system serving the region, while local access is available using local routes. The following roads are of particular interest:

- William Street: an RTA State Road (MR 173) that generally runs in an east-west direction between the Sydney CBD (Park Street) in the west and Cleveland Street in the east. It carries approximately 12,288 vpd in the vicinity of the site.

- Bourke Street: a local road that traverses in a north-south direction between Cowper Wharf Road in the north and Forbes Street in the South. Bourke Street is subject to a 50km/h speed zoning. However a "40km/h 8:00am-9:30am, 2:30pm-4:00pm, School Days" restriction applies. In close proximity to the site, Bourke Street carries two (2) traffic lanes, one (1) in each direction with time restricted kerbside parallel parking permitted.

- Forbes Street: a local road that runs in a north-south direction between Cowper Wharf Roadway in the north and Bourke Street in the south. Forbes Street becomes pedestrianized and intermittently restricts vehicular access from Cathedral Street up to Cowper Wharf Roadway. It is also subject to a 40km/h speed zoning, in the vicinity of the site.

- St Peters Street: a local street which traverses in an east-west direction between Forbes Street in the east and Bourke Street in the west. St Peters Street is subject to one-way westbound traffic flow. The

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

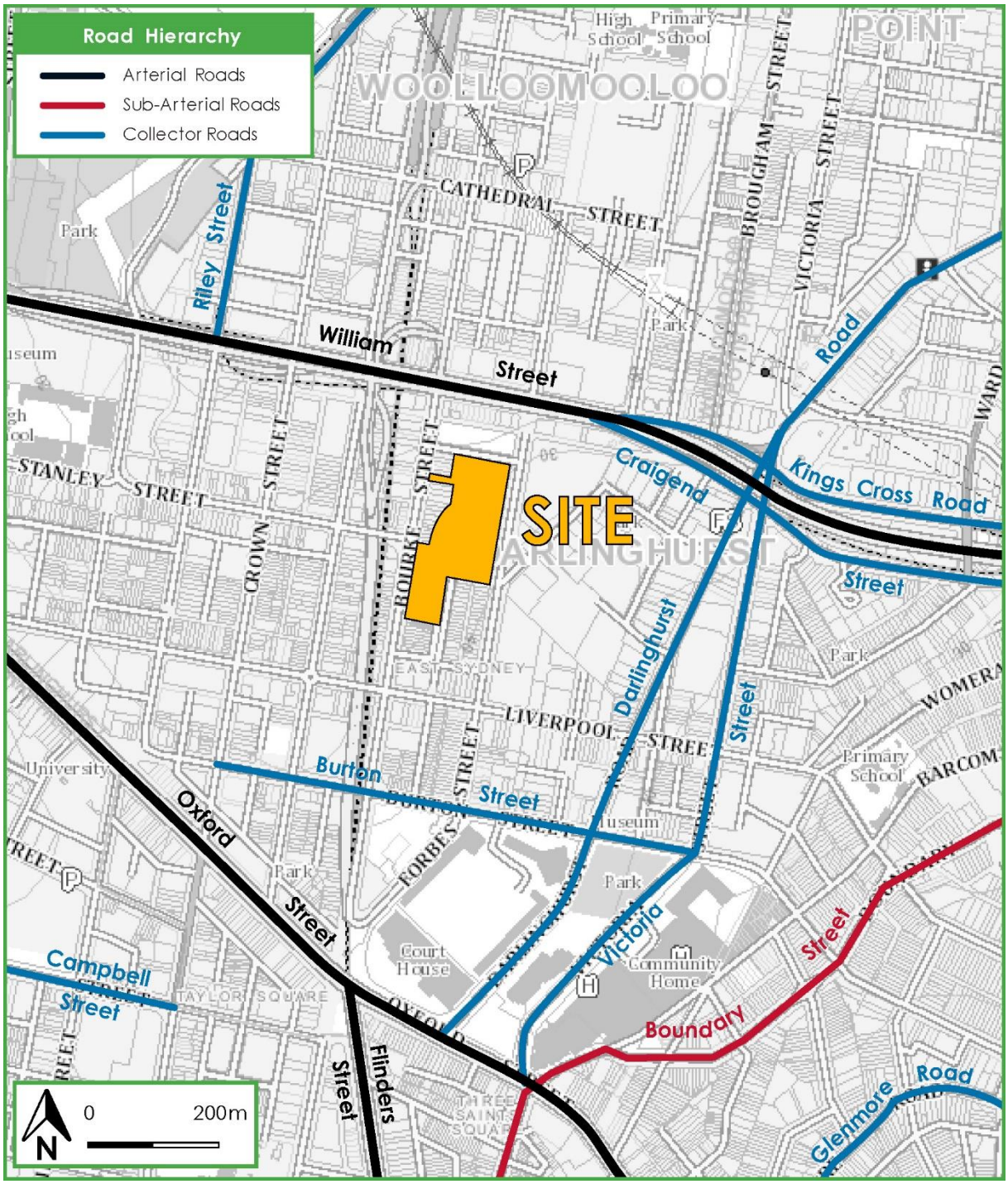


Figure 3: Road Hierarchy

3.2 Existing Parking Provision

The school currently provides two (2) off-street car parks as follows:

- Primary School car park, accessed via Bourke Street – provides 22 off-street parking spaces;
- Secondary School car park, accessed via St Peters Street – provides 82 off-street car parking spaces; and
- SCEGGS lease ten (10) parking spaces from the neighbouring Horizons building which is located at 184 Forbes Street, Darlinghurst
- The following pick – up and drop – off on-street car parking is available for the school:
- Nine (9) on-street parking spaces on Bourke Street for primary school student pick-up and drop-off; and
- Nine (9) parking spaces on Forbes Street for secondary school pick up and drop off.

In addition to the on-street provision of pick-up and drop-off parking it is highly noteworthy that the school operates a staggered pick-up scheme for the primary school during the PM peak period with years K-2 collected from 2:55pm and years 3-6 collected from 3:10pm.

3.3 Public Transport

The existing bus and train services that operate in the locality are shown in **Figure 4**. It is evident that the site is only 400 metres south of Kings Cross Station which provides services along the Eastern Suburbs/Illawarra Line to Sydney CBD and Bondi Junction. In addition to frequent train services, numerous bus services operate in the vicinity of the site as also indicated on Figure 4.

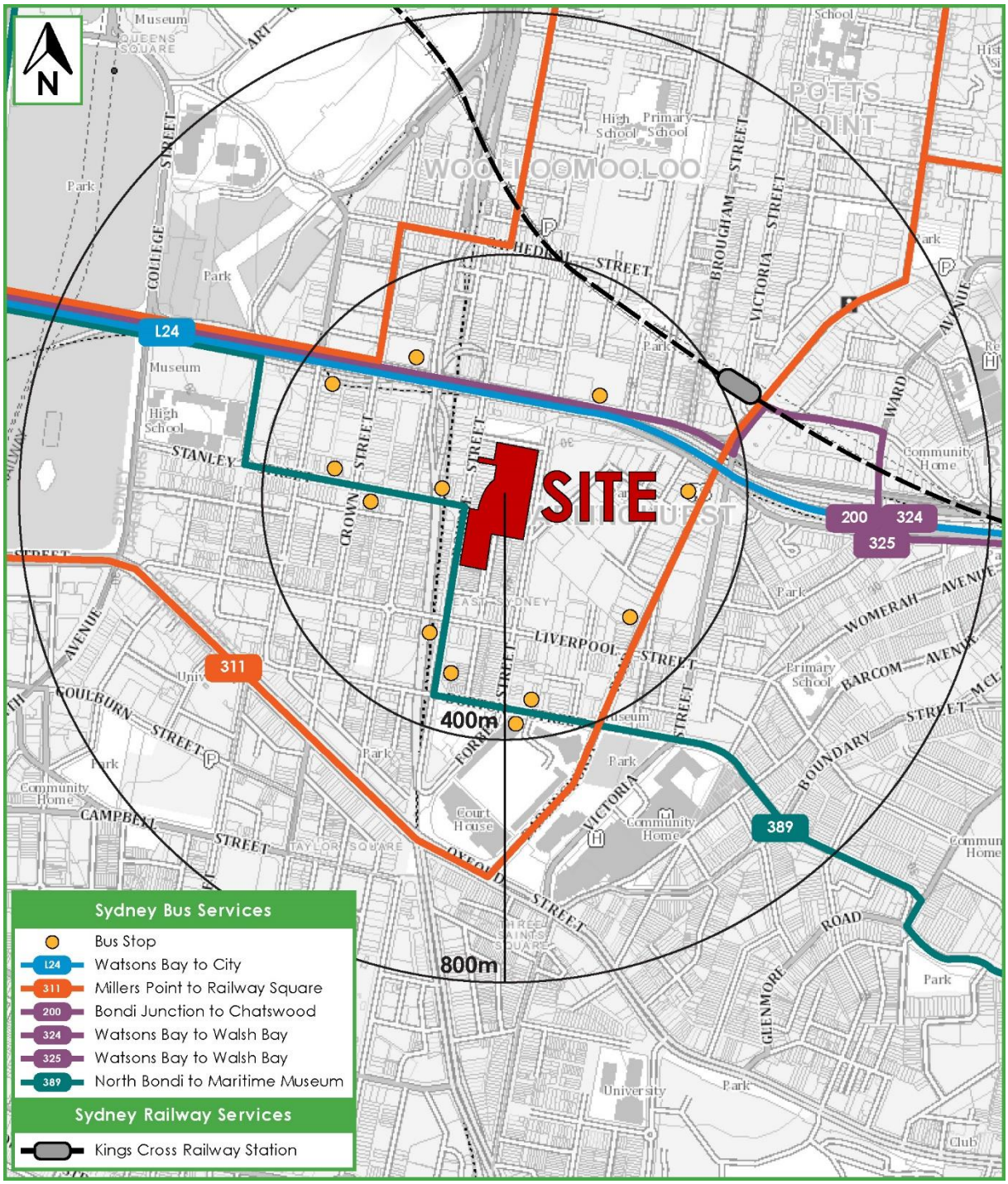


Figure 6: Public Transport

4. Description of Proposed Development

A detailed description of the proposed development is provided in the request for SEARs prepared by Urbis. The Masterplan Concept and Detailed DA development for which approval is described below.

4.1 Masterplan 2040- Concept DA

- Demolition of the following:
    - Wilkinson House fronting Forbes Street;
    - Library and science building fronting Bourke Street; and
    - The old gym building at the northern end of Thomson Street
- The partial demolition and redevelopment of the existing Barham Building fronting Forbes Street;
- Construction of the following
    - Four (4) storey school building at the corner of Forbes and St Peters Street;
    - Approximately six (6) storey multipurpose building fronting Bourke Street;
    - On-site vehicle drop off with associated car parking as part of the multi-purpose building; and
    - Approximately three (3) storey administration building fronting Forbes Street and enhancement of the Forbes Street entry to the school.
- Provision of a new car park accessed via Bourke Street providing:
    - 20 staff parking spaces; and
    - 9 off-street pick up and drop off spaces
- Retention of 115 off-street parking spaces for staff; and
- The retention of 18 on-street pick-up and drop off spaces with:
    - Nine (9) spaces on Bourke Street; and
    - Nine (9) spaces on Forbes Street

The final use of the multi-purpose building have not been determined but may include a 25m swimming pool, library or child care facility. For the purpose of this assessment it has been assumed that the future use will be a child care centre accommodating up to 90 children. This proposed use is expected to have the largest impact with regards to traffic.

4.2 Detailed DA

Detailed approval is sought for the following works:

- Demolition of 'Wilkinson House';
- Lateral excavation of the existing basement to create a full useable floor level;
- Construction of a new school building with an approximate GFA of 1,507m2 (net increase of 345m2)for the purpose of new teaching and education spaces with direct connections to the adjacent Joan Freeman Science Building

The parking demands associated with the development and the design aspects of the site access internal car park design are discussed separately below. Reference should be made to the reduced architectural plans included in **Appendix B**.

5. Parking Requirements

Parking Requirement *(Detailed DA only)*

The Sydney City Local Environmental Plan 2012 (LEP) requires educational establishments to provide parking at a maximum of 1 space for every 200m^2 of gross floor area of the building used for educational purposes. In this regard, the LEP parking rate has been applied to the proposed additions to the school and the resulting requirement is outlined in **Table 2** below.

Table 1: Existing Council Parking Rates and Provision

Type	GFA	Maximum Parking Rate	Maximum Spaces Permissible
Educational Establishment			
School GFA	345m^2	1 space / 200 m^2 GFA	2

It can be seen from Table 1 that with a proposed increase GFA of 345m^2, there is a requirement for a maximum provision of two (2) parking spaces. In response, the development does not propose any additional parking for the Detailed DA which is considered compliant with the requirements of the City of Sydney's LEP and appropriate as the detailed DA proposal seeks to improve existing facilities for the schools current staff and student population only.

Masterplan 2040- Concept DA

The Sydney City Local Environmental Plan 2012 (LEP) requires centre-based child care facilities, swimming pools and libraries to provide parking as per the rates provided in **Table 2** below. The LEP also requires a minimum provision of bicycle parking as per the rates provided in Table 2. The LEP parking rate will be required to be applied to the concept DA master plan once the use of the facility has been determined.

Table 2: Existing Council Parking Rates and Provision

Type	Maximum Parking Rate	Bicycle Parking Rates	
		Employee	Visitors
Child care centre	1 space + 1 space / 100 m^2 GFA	1 per 10 staff	2 per centre
Swimming Pool	No rate	1 per 10 staff	2 per 20m^2 pool area
Library	No rate	1 per 10 staff	2 + 1 per 200m^2 GFA

It is considered that a detailed traffic impact assessment will be required for the Masterplan to ensure the proposed car park which will accommodate 20 off-street parking spaces and nine (9) pick up and drop off spaces meets the requirements of the CoS LEP as detailed above. Notwithstanding the proposal is considered to be an appropriate provision for a child care centre with an indicative enrolment of 90 children. Furthermore, it is considered that the provision of off-street pick up and drop off parking spaces will help alleviate traffic congestion on Forbes St and Bourke Road during peak periods

6. Traffic Impacts

The detailed DA proposes no increase in student enrolment of staffing requirements and therefore it is considered that the proposal will not see any changes in traffic generation for the development. Notwithstanding, traffic congestion has been observed during the peak periods on streets surrounding the school.

The following recommendations are made to meet the needs of staff, students and parents of the school while achieving a mode shift towards public transport.

- The deployment of supervisors to monitor parent duration within the pick-up and drop off areas.
- Staggering start times for AM peak periods in line with the existing pick-up PM peak scheme. Drop off schemes are usually more difficult to manage but can be implemented as guidelines to reduce congestion during AM peak periods. Simple schemes include having older students arrive earlier during the AM peak. For families with students in different years, the drop off time for all students should be the drop off time for the eldest student.
- Provision of informative documentation (posters) along the schools boundary informing parents of the road rules for No Parking restrictions, these being
    - 2 minute duration
    - the driver must be within 3 metres of the vehicle
- Parent Re-Education through audits of school operations for pick up and drop off facilities result in the need to implement managed solutions. It is recommended that in addition to the 'Traffic Management Policy' that has already been advised above, the effective enforcement of the time periods be considered. This would require additional volunteers to monitor the facilities during peak periods.
- The walking bus is a concept where a group of children walk to school with one or more adults. The walking school bus allows to alleviate safety concerns of parents. These programs can change mind-sets and encourage active travel in life for both adults and children.
- Workplace Travel Plans can be issued to teachers before the first day of work and Travel Access Guides can be provided to students and parents on the first day of school. Early issue of these documents enable alternate modes of travel to be considered before habits are established.

- Car sharing schemes can be encouraged for both students and staff. Parents should be encouraged to car-pool multiple students to alleviate congestion during pick-up and drop-off periods. Initiatives should be implemented for staff whereby off-street parking spaces are only available for vehicles transporting two (2) or more staff to work.

7. Access & Internal Design Aspects

7.1 Access

The Masterplan 2040 concept development requires a Category 1 Driveway under AS 2890.1 (2004), being a combined entry-exit driveway of width 3.0 to 5.5 metres. In response the concept plan proposes two (2) driveways onto Bourke Street. One (1) driveway provides access with a 6.2m width and one (1) driveway for egress with a 6.2 m width. The arrangement is considered to be superior to the requirements as set out in AS2890.1 (2004).

7.2 Internal Design

The internal basement car park generally complies with the requirements of AS 2890.1 (2004) and the following characteristics are noteworthy:

7.2.1 Parking Modules

- All staff parking spaces shall be designed in accordance with a Class 1A User and provided with a minimum space length of 5.4m, a minimum width of 2.4m and a minimum aisle width of 5.8m.
- All parent/carer (drop-off / pick-up) parking spaces are provided with a minimum space length of 5.4m and are either provided with a minimum width of 2.7m and a minimum aisle width of 6.2m. These arrangements satisfy the Class 3A User requirements under AS 2890.1 (2004).
- All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.
- Dead-end aisles are provided with the required 1.0m aisle extension in accordance with Figure 2.3 of AS 2890.1 (2004).

7.2.2 Clear Head heights

- A minimum clear head height of 2.2m is provided for all areas within the basement car park as required by AS2890.1. A clear head height of 2.5m is provided above all disabled spaces as required by AS2890.6.

7.2.3 Other Considerations

- Appropriate visual splays are to be provided on the driveway onto Bourke Street in accordance with the requirements of Figure 3.3 of AS 2890.1 (2004).

- Appropriate visual splays are to be provided in accordance with the requirements of Figure 3.3 of AS2890.1 at all accesses.

In summary the internal configuration of the basement car park and loading areas have been designed in accordance with the both AS2890.1 and AS2890.6. 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. Construction Traffic Management

A detailed construction Traffic Management Plan (CTMP) will be prepared and submitted to Council separate to this Development Application. The below commentary addresses the overall management principles for the site during the construction process. It is noted that the preparation of a detailed CTMP report would require significant input from the appointed builder and would heavily rely upon the construction methodology which at this point cannot be confirmed. The proposed development would however adhere to the general CTMP principle that are provided for information purposes:

- Truck Routes

The truck routes utilised for the construction of the development would utilise the arterial road network where possible. A copy of those routes would be provided to all drivers prior to attending the site and all trucks serving the site will do so via the proposed route only. The proposed truck routes are recommended so that all vehicles could access the site in a forward direction and likewise the vehicle could also exit the site in a forward direction. The route is therefore recommended to ensure that no reverse manoeuvres on the public roadway.

With regard to the access locations that are nominated for the site, a swept path analysis assessment should be undertaken demonstrating forward entry and forward exit manoeuvres with all reverse manoeuvres to occur on site.

- Truck Size and Volumes

The maximum size of vehicles and frequency of construction delivery vehicles will be documented in the detailed CTMP report however it is anticipated that a maximum vehicle size of 12.5m HRV is generally feasible and should be included in the aforementioned swept paths. The anticipated truck volumes should be estimated and discussed in the Preliminary Construction Management Plan.

- Contractor Parking

Contractors will be encouraged to either use public transport or ride share to/ from the site nothing that the current layout of the school would allow for some off-street parking until future buildings are erected. This parking would of course be restricted for construction employees who car pool to reduce the impact and this can be further detailed subject to the detailed CTMP which will be undertaken at CC stage.

- Traffic Plans (if necessary)

Traffic Control Plans will be designed in accordance with the RMS Traffic Control at Worksites Manual and AS 1742.3. The TCP's would primarily relate pedestrian control to ensure appropriate safety measures are implemented.

- Swept Path Analysis

Swept Path Analysis should be undertaken for each construction stage demonstrating forward entry and exit during all construction stages. All entry and exit movements will be monitored by certified traffic controllers.

Accordingly, it is anticipated that a standard condition of consent would be imposed requiring a site specific CTMP be provided for this development application. The CTMP will be designed in accordance with the above principles and the draft CTMP would be issued to Council at a later stage for consideration and review.

9. Conclusions

In summary:

- The 2040 Masterplan proposes additional facilities for the existing school with the expected staff and student numbers of the primary and secondary school to be maintained as follows:

    - Primary School: 278 students & 39 staff; and
    - Secondary School: 642 students & 107 staff

- The City of Sydney LEP provides parking rates for Educational Establishments. The proposed detailed DA component of the development is required to provide a maximum total of two (2) car parking spaces under the LEP. The proposal is considered to be compliant with the requirements of the LEP.

- A detailed traffic impact assessment will be required for the Master Plan 2040 Concept Proposal after the development use has been determined to ensure parking demands are accommodated and traffic impacts are mitigated. The indicative off-street car park is considered to meet the requirements of the proposed uses of the development.

It is therefore concluded that the proposed development is supportable on traffic planning grounds and will operate satisfactorily.

Appendix A

Photographic Record

View looking east on Bourke Street at the subject site

View looking west on Forbes Street at site access

View looking west from Forbes Street to St Peters Street, Darlinghurst

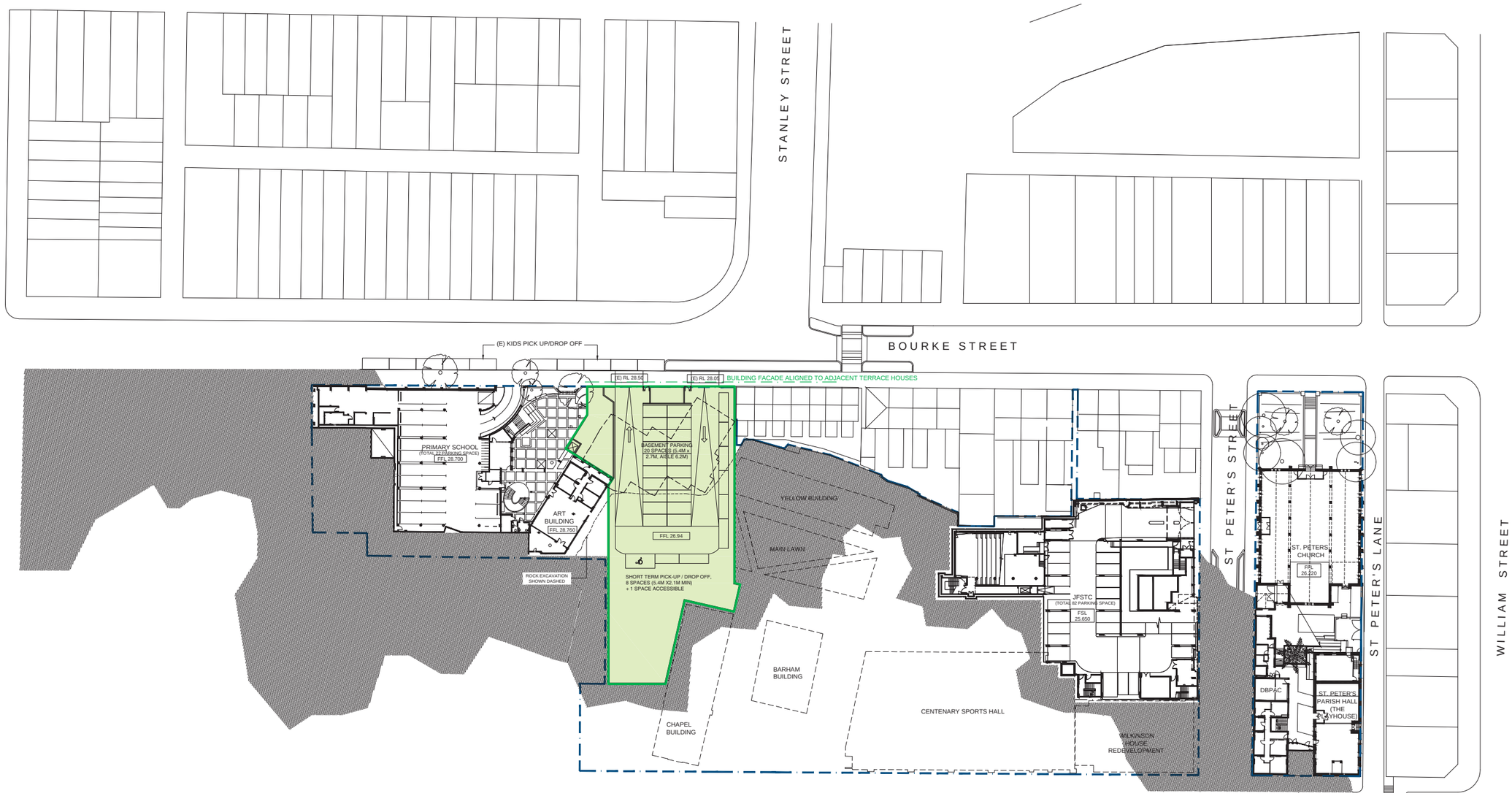
View looking west on Forbes Street at subject site

View looking east at St Peters Street from Bourke Street, Darlinghurst

View looking west on Forbes Street at subject site.

Appendix B

Reduced Plans



LEGENDS

- (N)MULTI-PURPOSE BUILDING
- (N)ADMINISTRATION BUILDING
- RESTORED BARHAM BUILDING
- REFURBISHED ENTRY
- (N)WILKINSON HOUSE REDEVELOPMENT
- SITE BOUNDARY

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RD	IB	CP
Job No.	Date	Scale
160441	NOV 17	1:500

NSW Nominated Architects:
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Alex Kibble Registration No. 6015

Do not scale drawings. Verify all dimensions on site. Notify architect of all discrepancies

10 20 30 40 50

Project
SCEGGS DARLINGHURST MASTERPLAN

Drawing Title
MASTERPLAN ENVELOPE LEVEL 1

Drawing No. **AR.MP.2101**

Revision **P3**

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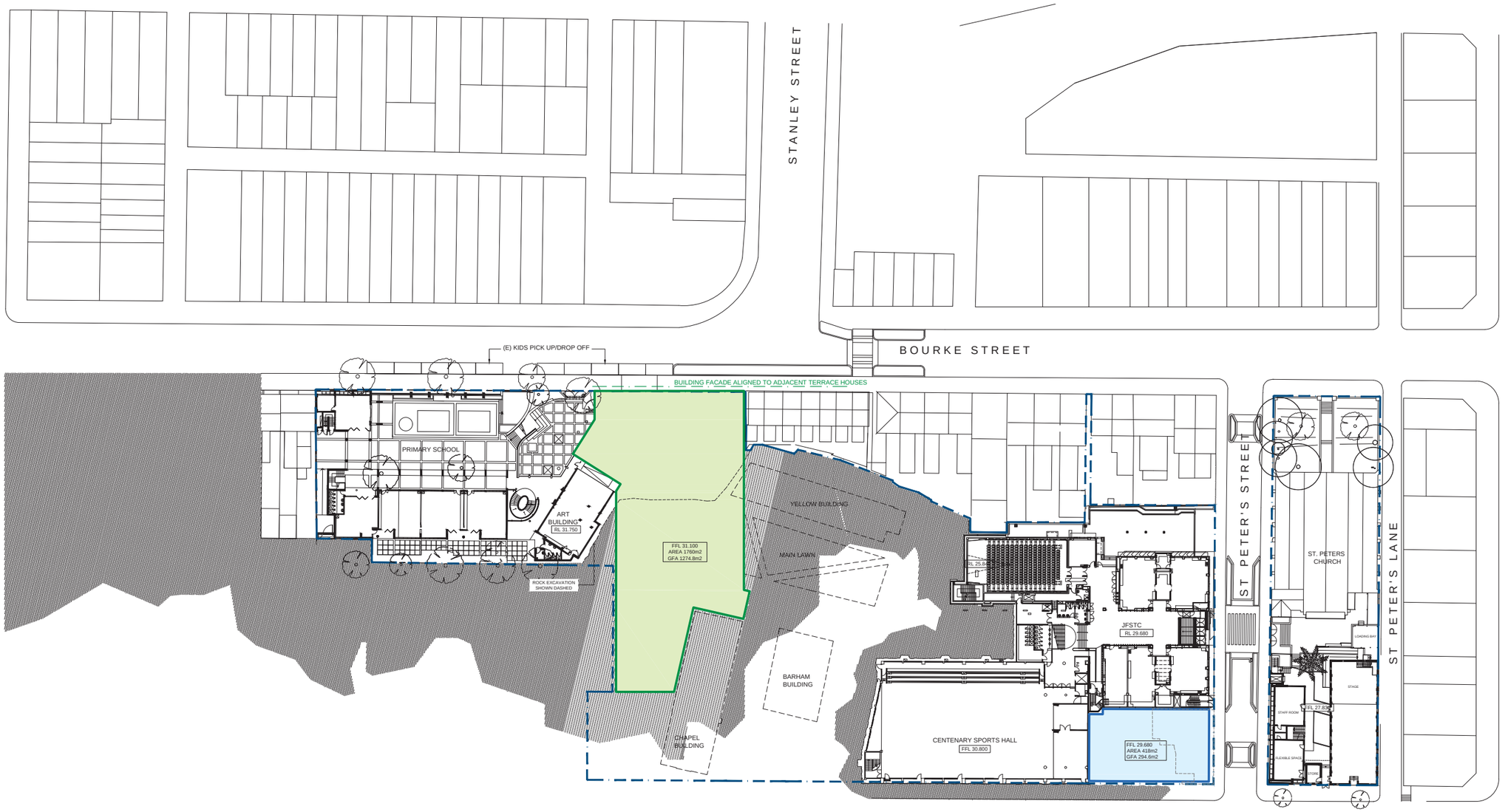

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Project
SCEGGS DARLINGHURST MASTERPLAN

Drawing Title
MASTERPLAN ENVELOPE LEVEL 2

Drawing No. **AR.MP.2102**

Revision **P3**

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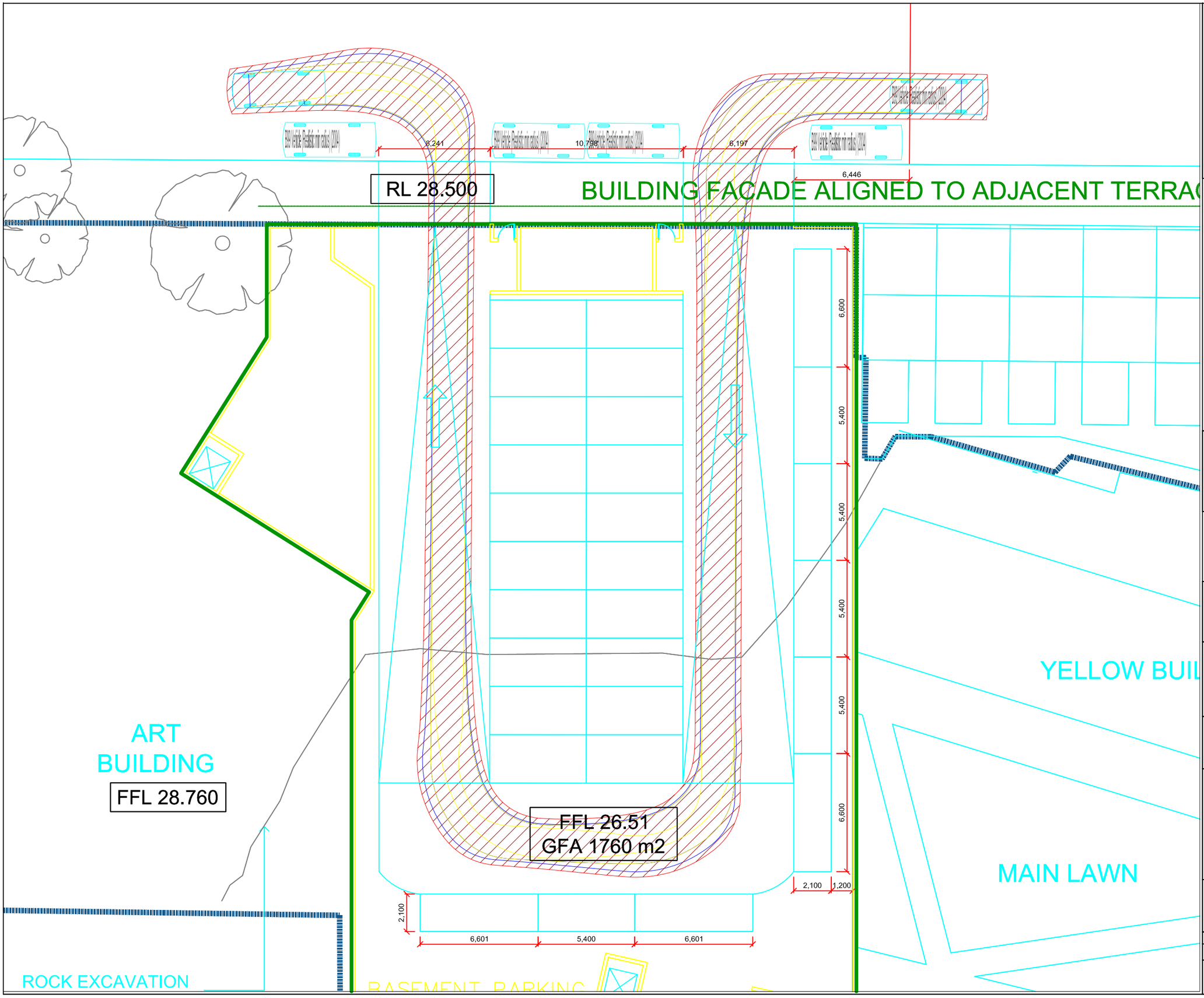
Appendix C

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	by.	date

Swept Path Legend:

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

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scale

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drawing title

Swept Paths Analysis
Site Access & Egress
B99 Design Vehicle

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