WENONA SCHOOL

TRAFFIC REPORT FOR PROPOSED ALTERATIONS AND ADDITIONS TO THE SENIOR SCHOOL FACILITY, WENONA SCHOOL, NORTH SYDNEY

JULY 2015

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TABLE OF CONTENTS

1. INTRODUCTION

1.1 Colston Budd Hunt & Kafes Pty Ltd has been commissioned by Wenona School to prepare a report on the traffic and parking implications of the proposed alterations and additions to the senior school at Wenona. The school is located on two campuses either side of Walker Street, North Sydney, with frontage to Miller Street as shown on Figure 1. The infants and senior schools are located on the western side of Walker Street. The junior school is located on the eastern side.

1.2 The proposed alterations and additions to the senior school include:-

- demolition of an existing office building located at 265 Miller Street and 6 Elliott Street;

- demolition of an existing childcare centre (former house) located at 263 Miller Street, and

- the design and construction of a six storey education establishment containing:

  - a 25 metre swimming pool and learn to swim pool;
  - teaching spaces and staff areas for STEM (Science, Technology, Engineering and Mathematics), and
  - a replacement pedestrian overpass crossing Elliott Street providing an improved link into other parts of the school campus between Elliott Street and Walker Street.

1.3 The new swimming pool and learn to swim pool will replace the existing pool located within the junior school. The existing pool will cease operation when the

new pools are opened. Any alternative use of the area occupied by the existing pool would be subject to a future separate development application.

1.4 An adjacent school office building and an existing childcare centre in Elliott Street will be demolished to provide the proposed alterations and additions to the senior school.

1.5 The alterations and additions to the senior school are shown on plans prepared by TZG Architects. The proposed works will not result in an increase in student numbers and staff numbers at the school. The works will provide new and improved facilities for existing students and staff, with improved pedestrian connections within the main school campus.

1.6 The following SEARS have been issued for this project:

" 5. Transport and Accessibility

Include a transport and accessibility assessment, which details:

- *existing pedestrian and cycle movements within the vicinity of proposed development*
- *an estimate of the total daily and peak hour trips generated by the proposal including vehicle, public transport, pedestrian and cycle trips;*
- *the adequacy of public transport to meet the likely future demand of proposed development;*
- *measures to promote travel choices that support the achievement State targets, such as a location-specific sustainable travel plan;*
- *the daily and peak vehicle movements impact on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, the need/associated funding or upgrading or road improvement works (if required);*

- *the proposed access arrangements and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and cycle networks;*
- *proposed car and bicycle parking provision, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian standards;*
- *service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times); and*
- *traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.*

Relevant Policies and Guidelines:

- *Guide to Traffic Generating Developments (Roads and Maritime Services);*
- *EIS Guidelines – Road and Related Facilities (DoPI);*
- *NSW Planning Guidelines for Walking and Cycling;*
- *Austroads Guide to Traffic Management Part 12: Traffic Impact Development."*

1.7 This report examines the traffic and parking implications of the proposed development through the following chapters:-

- Chapter 2 – describing the existing conditions; and

- Chapter 3 – assessing the traffic and parking implications of the proposed development.

2. EXISTING CONDITIONS

2.1. Wenona School is located on two campuses either side of Walker Street, North Sydney, with frontage to Miller Street, as shown on Figure 1. The school has frontage to Walker Street, Ridge Street, Miller Street and Elliott Street. The junior school is located on the eastern side of Walker Street and the infants and senior schools are located on the western side of Walker Street. The senior school is located in the western part of the main school campus, between Miller Street and Elliott Street. A pedestrian crossing in Walker Street, located some 100 metres south of Ridge Street, links the junior school to the main campus, and a pedestrian bridge over Elliott Street links the senior school to other parts of the school campus between Elliott Street and Walker Street.

2.2. Land-use in the vicinity of the school is a mix of residential and commercial comprising terrace houses, residential apartment buildings and commercial developments. North Sydney Oval and St Leonards Park are located to the north and Hotel Rydges North Sydney bounds the school to the south. The school owns properties on the western side of Elliott Street which are currently used as a childcare centre and an existing school office building.

Road Network

2.3. The road network in the vicinity of the school is made up of Miller Street, Ridge Street, Walker Street, Elliott Street and McLaren Street. Miller Street is located west of the school and forms part of a north-south traffic route linking Willoughby and Cammeray in the north, with North Sydney. In the vicinity of the school, Miller Street provides a four lane undivided road with one traffic lane and one parking lane in each direction, clear of intersections. Clearways operate in peak

periods in the direction of peak traffic flow. The intersection of Miller Street with Ridge Street is controlled by traffic signals.

2.4. Ridge Street runs in an east-west direction adjacent to the northern boundary of the school. In the vicinity of the school, Ridge Street provides one traffic lane and one parking lane in each direction, clear of intersections. East of Walker Street, Ridge Street is a no through road and provides 90° parking on the northern side and parallel parking on the southern side. Ridge Street intersects Walker Street at a sign controlled intersection, with priority given to east-west traffic in Ridge Street.

2.5. Walker Street runs in a north-south direction between Ridge Street and the Pacific Highway. In the vicinity of the school, it provides an undivided road with one traffic lane and one parking lane in each direction, clear of intersections. Parking restrictions in Walker Street adjacent to the school allow for student set-down and pick-up.

2.6. Elliott Street runs south from Ridge Street with the junior school located on the eastern side of the street and infants/senior school on the western side of the street. Elliott Street is a cul-de-sac that provides access to the school, childcare centre and adjacent developments, including the Rydges Hotel. It provides a two-way road with one traffic lane in each direction. On-street parking in Elliott Street is provided, with kerbside parallel parking on the eastern side and 90° angled parking on the western side. Three on-street set-down/pick-up spaces are available in Elliot Street, for use by the childcare centre (7.30-10.30am and 3.00-5.00pm) Elliott Street intersects with Ridge Street at a sign controlled intersection, with priority given to east-west traffic in Ridge Street.

2.7. McLaren Street is located to the south and provides an east-west connection between the Pacific Highway and Walker Street. It provides an undivided road with one traffic lane and one parking lane in each direction, clear of intersections. McLaren Street intersects with Walker Street at a sign controlled intersection, with priority given to north-south traffic on Walker Street.

Traffic Flows

2.8. Traffic counts on roads in the vicinity of the school were undertaken during the morning and afternoon peak periods (covering school set down and pick up times). The school has its peak traffic activity at the start of the school day (7.45am to 8.45am) and at the end of the school day (2.45pm to 3.45pm). The counts covered these peak periods. Existing two-way (sum of both directions) hourly flows for these times are summarised in Table 2.1.

Table 2.1 Existing Two-Way (Sum of Both Directions) Peak Hour Traffic Flows

Road/Location	Morning (Vehicles/Hour)	Afternoon (Vehicles/Hour)
Miller Street		
- north of Ridge Street	1,515	1,070
- south of Ridge Street	1,115	850
Ridge Street		
- west of Miller Street	420	355
- east of Miller Street	640	425
- east of Elliott Street	525	355
- east of Walker Street	85	140
Walker Street		
- south of Ridge Street	545	355
Elliott Street		
- south of Ridge Street	195	120

2.9. The results in Table 2.1 reveal the following:-

- Miller Street carries traffic flows in the range of 1,050 to 1,550 vehicles per hour two-way during the morning and afternoon peak periods north of Ridge Street. Traffic flows south of Ridge Street are lower, at some 850 to 1,150 vehicles per hour two-way during the peak periods;

- traffic flows on Ridge Street west of Walker Street are some 400 to 650 vehicles per hour two-way during the morning and some 350 to 450 vehicles per hour two-way during the afternoon peak period. Traffic flows east of Walker Street are lower, at some 80 to 150 vehicles per hour two-way during the peak periods;

- Walker Street carries traffic flows in the range of 350 to 550 vehicles per hour two-way during the morning and afternoon peak periods; and

- traffic flows on Elliott Street are some 100 to 200 vehicles per hour two-way during the morning and afternoon peak periods.

Public Transport, Pedestrian and Cycling Facilities

2.10 The school is some 15 minutes walk from North Sydney Railway Station. North Sydney is on the North Shore Line (Berowra-Parramatta via The City) and the Northern Line (Berowra-North Sydney via Strathfield and the City).

2.11 Services on the North Shore Line through North Sydney operate on a five to ten minute headway in each direction. Services on the Northern Line operate on a 30 minute headway in each direction. During the weekday peak periods, services are more frequent.

2.12 Local bus services are provided by Sydney Buses. These services link North Sydney with surrounding areas. There are bus stops on the Pacific Highway and Miller Street to the west of the school. There are also bus stops on Falcon Street north of the school. Bus services provide links to all surrounding areas, including the City, North Shore and the Northern Beaches.

2.13 In addition to local bus services, the school provides dedicated school buses in Walker Street, with school bus zones located on the western side of Walker Street north of the existing pedestrian crossing. Four school buses operate in Walker Street, setting down and picking up students. Thus the site is readily accessible by public transport services.

2.14 Existing pedestrian connections within the school and footpaths on the surrounding road network provide convenient access to the surrounding area including rail services at North Sydney railway station and to bus services on Miller Street, Walker Street, Pacific Highway and Falcon Street.

2.15 The school currently manages the student set-down and pick-up operations. Walker Street and Elliott Street provide the main set-down/pick-up locations for students. Student set-down/pick-up for the infants and junior schools generally occurs in Walker Street from the 5 minute parking zones which operate during the morning and afternoon periods. Students are also set-down and picked-up from Elliott Street.

2.16 The existing pedestrian crossing in Walker Street, which links the junior school to the main campus, is manned and controlled by a crossing supervisor during set-down and pick-up periods. Pedestrian movements in Elliott Street and at the intersection of Ridge Street/Elliott Street are also supervised by school personnel.

2.17 The North Sydney local cycle network has cycle routes along Ridge Street and Miller Street, in the vicinity of the school. The local network then connects into the sub-regional network. The school is therefore accessible by bicycle.

2.18 The school will be separately preparing a green travel plan, which will encourage use of other modes of travel other than by car. That plan does not form part of this application.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 The proposed alterations and additions to the senior school include:-

- demolition of an existing office building located at 265 Miller Street and 6 Elliott Street;

- demolition of an existing childcare centre (former house) located at 263 Miller Street, and

- the design and construction of a five storey education establishment containing:

    - a 25 metre swimming pool and learn to swim pool;
    - teaching spaces and staff areas for STEM (Science, Technology, Engineering and Mathematics), and
    - a replacement pedestrian overpass crossing Elliott Street providing an improved link into other parts of the school campus between Elliott Street and Walker Street.

3.2 The new swimming pool and learn to swim pool will replace the existing pool located within the junior school. The use of the new pools for training and learn to swim will remain at a similar level of use to the existing pool. The existing numbers and size of training sessions and learn to swim classes will not change.

3.3 The existing pool will cease operation when the new pools are opened. Any alternative use of the area occupied by the existing pool would be subject to a future separate development application.

3.4 An adjacent school office building and an existing childcare centre in Elliott Street will be demolished to provide the proposed alterations and additions to the senior school.

3.5 The alterations and additions to the senior school are shown on plans prepared by TZG Architects. The proposed works will not result in an increase in student numbers and staff numbers at the school. The works will provide new and improved facilities for existing students and staff, with improved pedestrian connections.

3.6 The implications of the proposed alterations and additions are assessed through the following sections:-

- public transport, walking and cycling;
- parking provision;
- access, servicing and loading;
- traffic effects;
- construction traffic management;
- SEARS;
- summary.

Public Transport, Walking and Cycling

3.7 As previously discussed, the site has good access to public transport services through the area. These include rail, bus and school bus services which provide public transport access to and from the school. This is consistent with government policy and planning principles of:-

a) improving accessibility by walking, cycling and public transport;

b) improving the choice of transport and reducing dependence solely on cars for travel purposes;

c) moderating the growth in travel and the distances travelled, especially by car;

d) supporting the efficient and viable operation of public transport services.

3.8 The school is located adjacent to existing pedestrian links in the area. The pedestrian connections within the school, including the new pedestrian bridge over Elliott Street, and footpaths on the surrounding road network provide convenient access to the surrounding area including rail services at North Sydney railway station and to bus services on Miller Street, Walker Street, Pacific Highway and Falcon Street.

3.9 The school is close to public transport services, and will therefore be readily accessible by public transport. To support accessibility by bicycles, appropriate bicycle parking and end-of-trip facilities would be provided within the school.

Parking Provision

3.10 With no increase in student and staff numbers, no additional parking is required as a result of the proposed alterations and additions to the school. The proposed works will however result in a loss of 11 on-site parking spaces.

3.11 It is proposed to replace the lost spaces with leased spaces within Council's Ridge Street car park or other commercial car parks, as necessary. We note that Council has previously accepted provision of off-site parking within Council's car park. The school will be separately preparing a green travel plan, which may allow a reduction in the number of spaces to be leased.

3.12 The new swimming pool and learn to swim pool will replace the existing pool located within the junior school. The use of the new pools for training and learn to swim will remain at similar levels of use to the existing pool.

Access Servicing and Loading

3.13 Access arrangements will be unchanged. The existing 11 space car park located off Elliott Street and the three parking spaces located at the school office building will be demolished. These spaces could be replaced with leased spaces within Council's Ridge Street car park.

3.14 With the closure of the existing car park, occasional deliveries will occur on street at the end of Elliot Street (see attached truck turning paths in Figure 2) adjacent to the new pool with goods trolleyed into the school. Bollards will be provided opposite the stairs to the pool foyer to stop trucks parking in this area.

3.15 With regards to the number of deliveries, the school has provided the following information:

"Reviewing current function of existing building, we have service and goods delivery that includes:

- *Science & Tas material delivery (once a term);*
- *Cleaning perishable products delivery (once) & sanitary units (4 times a term);*
- *Stormwater and sewer pump services (2 times a year);*
- *Rubbish collection (daily);*
- *Function set-up 4 times a year.*

The new facilities will add pool chemicals and supplier delivery and pool services (once a month). In all and because all the above are coordinated and aligned with School terms, we can't see more than 1-2 movements a day associated with loading dock."

3.16 As today, garbage collection will continue to be from on-street. Hence, the number of additional deliveries would be infrequent. There will be no deliveries during the school set-down and pick-up times. The existing pool and its associated servicing will cease to operate when the new pool opens.

Traffic Effects

3.17 The proposed development will not result in an increase in student and staff numbers. Therefore no increase in traffic generation will result from the proposed alterations and additions to the senior school. Use of other modes of travel such as public transport, pedestrian and cycle trips would remain similar. The school will be preparing a green travel plan which will aim to reduce the number of trips to/from the school by car.

3.18 The closure of the childcare centre will result in a reduction in traffic using Elliott Street of some 10 to 15 vehicles per hour two-way during the morning and afternoon peak periods. The loss of 11 spaces will also reduce traffic flows in Elliott Street. There will also be minor re-distribution of existing school traffic from Walker Street to Elliott Street associated with the relocation of the existing pool.

3.19 Overall traffic related to the proposed alterations and additions would result in a small reduction in traffic flows in Walker Street and similar traffic flows in Elliott Street compared to existing flows. Hence, traffic effects would be minor.

3.20 We understand there is a proposed aged care facility with access from Elliott Street. Aged care facilities have very low traffic generations. The proposed aged care facility and the proposed school development would therefore only have minor traffic effects on Elliott Street and surrounding streets.

3.21 Therefore no mitigation measures are required for the proposed school development with regards to roadworks, public transport, pedestrian and cycle networks.

Construction Traffic Management

3.22 At this stage a builder has not been appointed to carry out the proposed works and hence the construction methodology, process and staging cannot be precisely defined. The builder will be responsible for the lodgement of the construction traffic management plan, which will be prior to the commencement of construction.

3.23 During the construction of the development, an on-site work zone will be established within the western part of the campus, between Miller Street and Elliott Street. Construction and containment fencing will be erected around the perimeter of the site compound, with scaffolding and overhead protection provided where required.

3.24 Access to the construction compound will be provided from Miller Street and Elliott Street. In order to minimise construction traffic on surrounding streets, trucks will approach and depart the site along designated truck routes. Truck will not be permitted to access the site to and from the east via Walker Street.

3.25 The loading and unloading of construction material from trucks will be carried out on-site and from an on-street Works Zone (to be identified by the builder). The

location and operation of the on-street Works Zone will need to be agreed with and approved by North Sydney Council's traffic Committee. Construction material will be stored on-site within designated material handling areas.

3.26 Vehicular access to adjacent properties in Elliott Street, Miller Street and Ridge Street will be maintained during the construction period. Pedestrian activity within the school campus and on adjacent streets will be protected with the provision of appropriate construction barriers, with overhead protection and Class B hoardings provided where required.

3.27 Openings in the construction fencing and the construction access driveways will be managed and controlled by qualified site personnel. Pedestrian movements across the access driveways and the movement of trucks entering and exiting the site compound will be managed and controlled by traffic controllers. Pedestrian warning signs will be erected adjacent to the driveway and pedestrian paths within the senior campus, adjacent to the construction activity.

3.28 Work associated with the construction activity will be carried out in accordance with Council's agreed construction hours.

3.29 The site contractor will be responsible to instruct and control sub-contractors regarding the hours of work. Any work outside the approved construction hours would be subject to prior approval from Council.

3.30 The control of hours of operation avoids truck movements during the early morning and evening periods. To facilitate an efficient program, the arrival and departure of trucks associated with the construction works will be regulated and on-site works will be carefully managed and controlled by site personnel. Trucks will be called onto the site when required.

3.31 Traffic management during construction will include:-

- provide a convenient and appropriate environment for students and pedestrians;
- minimise effects on pedestrian movements and amenity, both within the school grounds and adjacent to Elliott Street;
- provide appropriate safety fencing around the perimeter of the site compound, with overhead protection where required;
- separate construction traffic from general school traffic;
- management and control vehicular movements to and from the site;
- maintain on-street parking in Elliott Street, Ridge Street and Miller Street in the vicinity of the site;
- maintain traffic capacity at intersections and mid-block in the vicinity of the site;
- maintain access to existing residential and commercial developments in the vicinity of the site;
- construction vehicles to be accommodated on-site;
- restrict construction vehicle routes to/from the site to the main road network through the area;

- construction access driveways and pedestrians to be managed and controlled by qualified site personnel;

- construction activity to be carried out in accordance with approved hours of construction;

- maintain safety for workers, students and school personnel;

- manage and control vehicle activity in the vicinity of the site;

- the preparation of the construction traffic management plan, signage detail, control of pedestrians and control and management of construction activity/vehicles in the vicinity of the site will be the responsibility of the appointed builder.

SEARS

3.32 With regards to the SEARS, it should be noted that no increase in traffic generation will result from the proposed development. There will be a small reduction in traffic flows in Walker Street and similar traffic flows in Elliott Street. Hence, traffic effects will be minor. No mitigation measures are required with regards to roadworks, public transport, pedestrian and cycle networks.

3.33 The SEARS are discussed below:

- *existing pedestrian and cycle movements within the vicinity of proposed development*
- *an estimate of the total daily and peak hour trips generated by the proposal including vehicle, public transport, pedestrian and cycle trips.*

3.34 Existing traffic and transport conditions are discussed in Chapter 2 in relation to road network, traffic flows, public transport and pedestrian facilities,

- *the adequacy of public transport to meet the likely future demand of proposed development;*
- *measures to promote travel choices that support the achievement State targets, such as a location-specific sustainable travel plan;*
- *the daily and peak vehicle movements impact on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, the need/associated funding or upgrading or road improvement works (if required);*
- *the proposed access arrangements and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and cycle networks;*
- *proposed car and bicycle parking provision, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian standards;*
- *service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times); and*
- *traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.*

3.35 The traffic and transport effects of the proposed development are discussed in Chapter 3 in relation to public transport, walking, cycling, parking provision, access, servicing, traffic effects and construction traffic management.

Relevant Policies and Guidelines:

- *Guide to Traffic Generating Developments (Roads and Maritime Services);*
- *EIS Guidelines – Road and Related Facilities (DoPI);*
- *NSW Planning Guidelines for Walking and Cycling;*
- *Austroads Guide to Traffic Management Part 12: Traffic Impact Development."*

3.36 This report has been prepared in accordance with these relevant Policies and Guidelines.

3.37 The RMS publication gives guidelines regarding the assessment of developments with regards to traffic, access, parking and servicing aspects. This report addresses those aspects in accordance with RMS Guide.

3.38 The DoP publication relates to EIS guidelines for road facilities and is not strictly applicable to the SEE for this development. However, the EIS does have guidelines with regards to construction traffic. The construction management plan in this report follows these guidelines.

3.39 The NSW publication gives guidelines regarding cycling and walking facilities. This report addresses these facilities in the vicinity of the school.

3.40 The Austroads publication gives guidelines for the assessment of developments with regards to traffic effects. This report assesses these effects in accordance with the Austroads Guidelines.

Summary

3.41 In summary, the main points relating to the implications of the proposed alterations and additions to the senior school are:-

i) no increase in student and staff numbers;

ii) the school is close to public transport services;

iii) access arrangements will be unchanged;

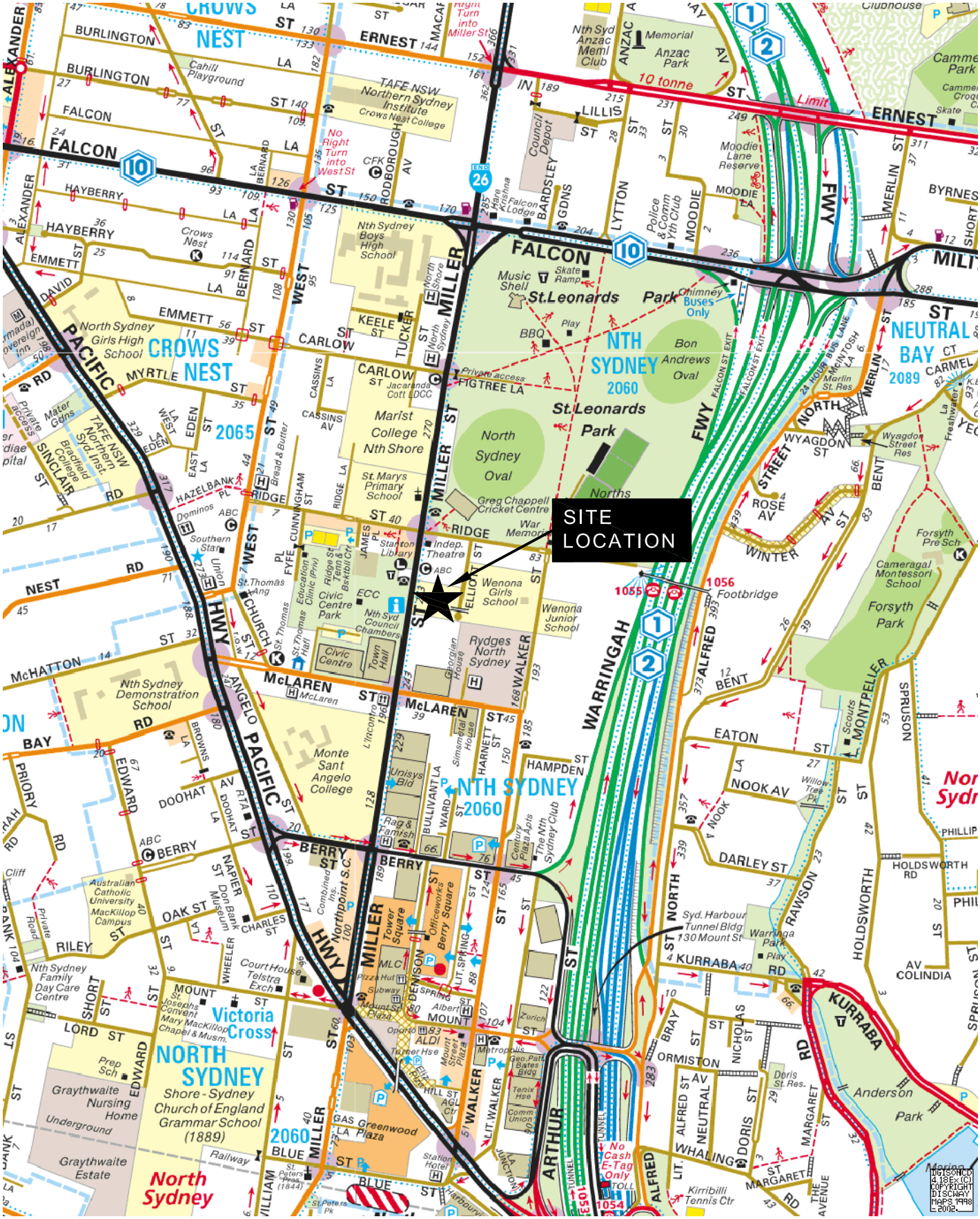
iv) lost parking spaces would be replaced as leased spaces in Council's Ridge Street car park or other commercial car parks, as necessary;

v) occasional deliveries will occur on street at the end of Elliot Street;

vi) traffic effects will be minor;

vii) no mitigation measures are required with regards to roadworks, public transport, pedestrian and cycle networks;

viii) the SEARS have been addressed.



Colston Budd Hunt & Kafes Pty Ltd

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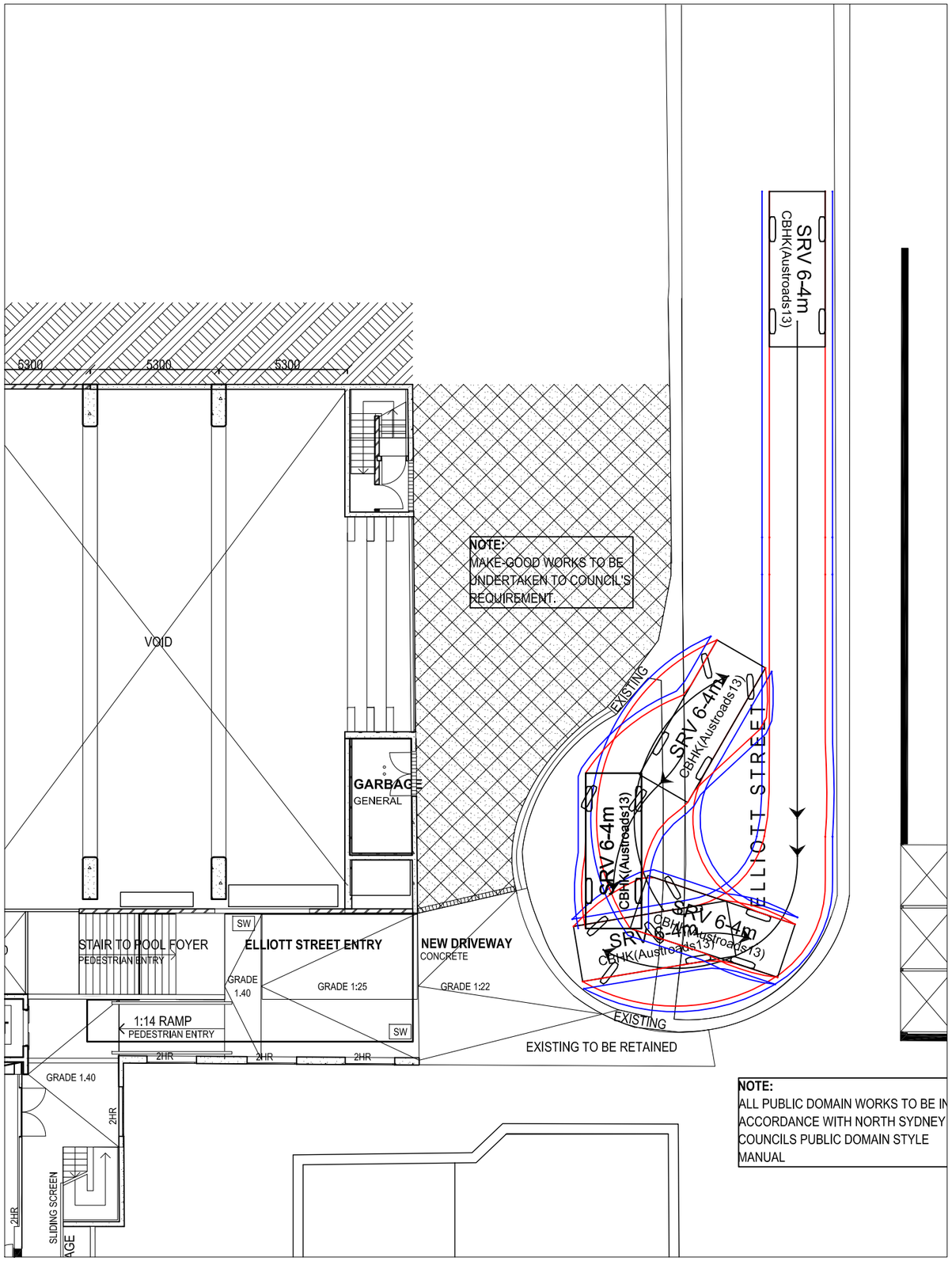
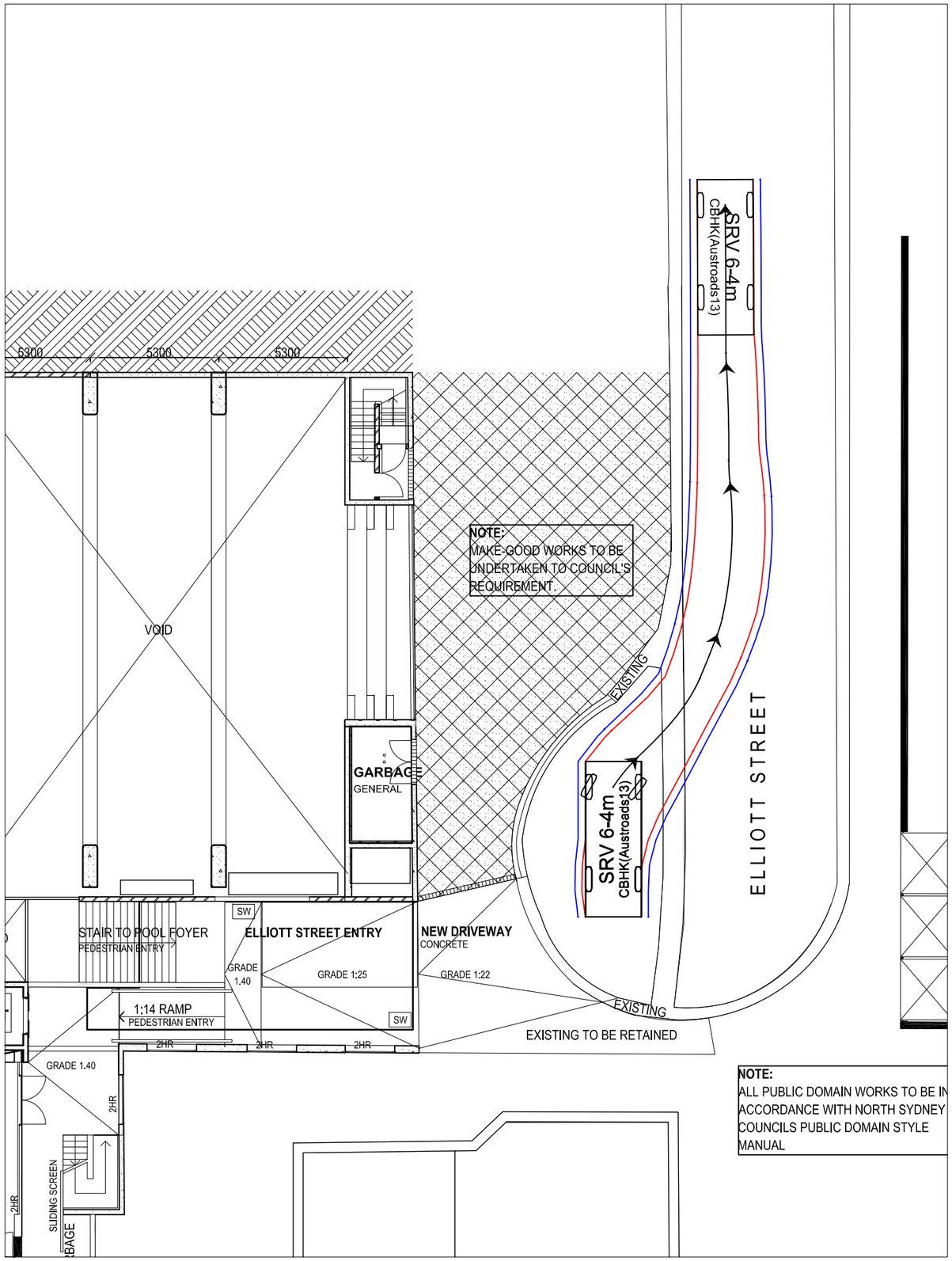
Figure 1





NOTE:
SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

6.4m SMALL RIGID VEHICLE SWEPT PATHS

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2