



Construction Traffic Management Plan

Cranbrook School, Bellevue Hill

For Cranbrook School
14th December 2018

**parking;
traffic;
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1. Introduction

1.1 Project Summary

Parking and Traffic Consultants (PTC) has been engaged by Cranbrook School to prepare a Construction Traffic Management Plan (CTMP) to the Department of Planning and Environment, associated with the proposed state significant development at Cranbrook Senior School, Bellevue Hill.

The location of the site is shown in Figure 1

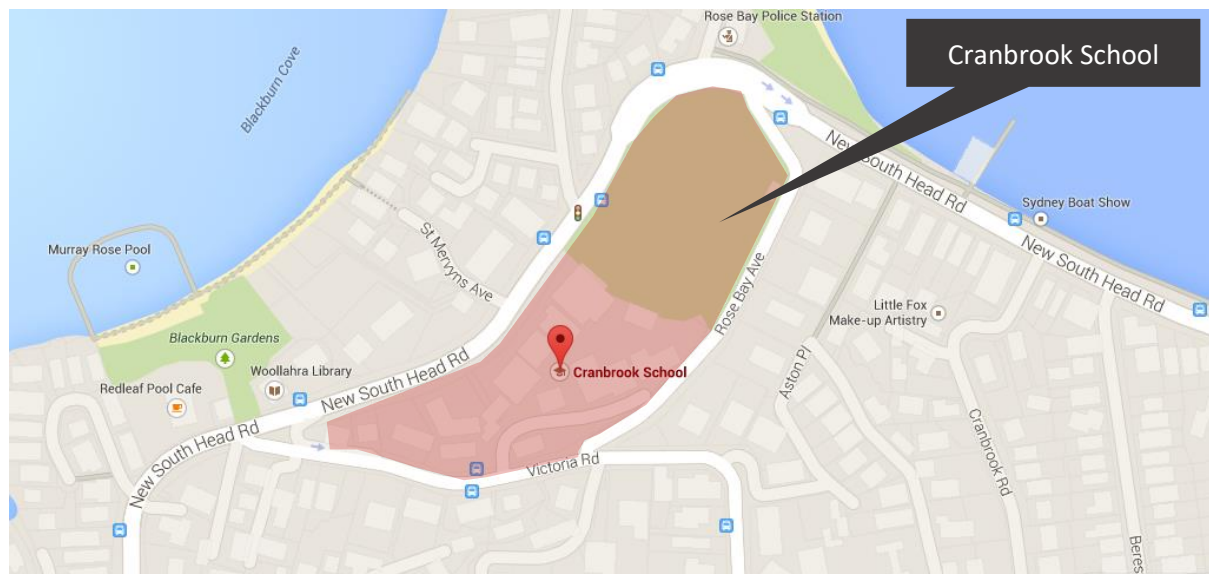


Figure 1 – Cranbrook School Location Plan

In summary, the development is focused on two areas:

- The Centenary Building
 - This involves the demolition of the existing War Memorial Hall and Mansfield Building, and the construction of a new five level, multi-purpose teaching facility.
- The Aquatic and Fitness Centre
 - The construction of a new 50 metre, 8 lane swimming pool, learn to swim pool, multi-purpose sports hall and fitness centre and modifications to the existing oval to accommodate the structure beneath the school oval.
 - The construction of an underground parking facility for 124 vehicles.

The development also proposes the relocation of the existing on-street 'Drop off / Pick up' facility from Rose Bay Avenue to the existing internal driveway.

1.2 Purpose of this Report

This report has been prepared to present the traffic and pedestrian management arrangements associated with the construction of the new education facility development.

- Section 2 - Background
- Section 3 - A description of the proposed development
- Section 4 - A description of the road network and transport facilities serving the development
- Section 5 - A description of the proposed management of construction vehicles and on site traffic
- Section 6 - Response to Woollahra Council proposed Condition (D.9 – Construction Management Plan)
- Section 7 - Conclusion

2. Background

2.1 Site Context

Cranbrook School is located in the suburb of Bellevue Hill, approximately 6 kilometres east of Sydney CBD. The campus is located to the south east of New South Head Road, with a 430 metre frontage to New South Head Road, a 140 metre frontage to Victoria Road and a 370 metre frontage to Rose Bay Avenue.

The Senior School caters for students from year 7 to year 12.

The current site layout is shown in Figure 2.



Figure 2 – Existing Cranbrook School Campus

2.2 School Population

The current approved student numbers within the Senior School is 1115 and the current staff full time equivalent (FTE) population is 168.

2.3 School Start and Finish Times

The core school start and finish times are; 8.15am to 3.20pm, with out of school activities running both before and after these hours.

2.4 On and Off Site Parking Provisions and Site Access and Egress

The existing parking provisions for the site consists of a small number of allocated on site spaces and usage of the unrestricted on street parking provision in the vicinity of the site.

The site currently provides parking for 29 vehicles within the existing internal driveway at the main school entrance. These spaces are allocated to senior staff members and employees. This area is posted with a 10 kph speed limit and is designated as a 'shared zone' for use by vehicles and pedestrians. This area is accessed via the main school entrance off Victoria Road and the exit is via a driveway onto Rose Bay Avenue. There are also five maintenance vehicle access points to the school, two off New South Head Road, two off Rose Bay Avenue and one off both Victoria Road.

In addition to the vehicular access points, pedestrian access to the site is via the following locations;

- Main gate, Victoria Road,
- Internal driveway exit, Rose Bay Avenue; and
- Pedestrian access gate, New South Head Road

The parking area and site access and egress points are shown on Figure 3.



Figure 3 – On Site Parking & Site Access & Egress

3. Proposed Development

The proposed development is focused on two main areas of the campus:

- The Centenary Building
 - This involves the demolition of the existing War Memorial Hall and Mansfield Building, with the construction of a new five level, multi-purpose teaching facility.

Figure 4 is an extract of the proposed development plans, produced by Architectus showing a typical level of the proposed Centenary Building.

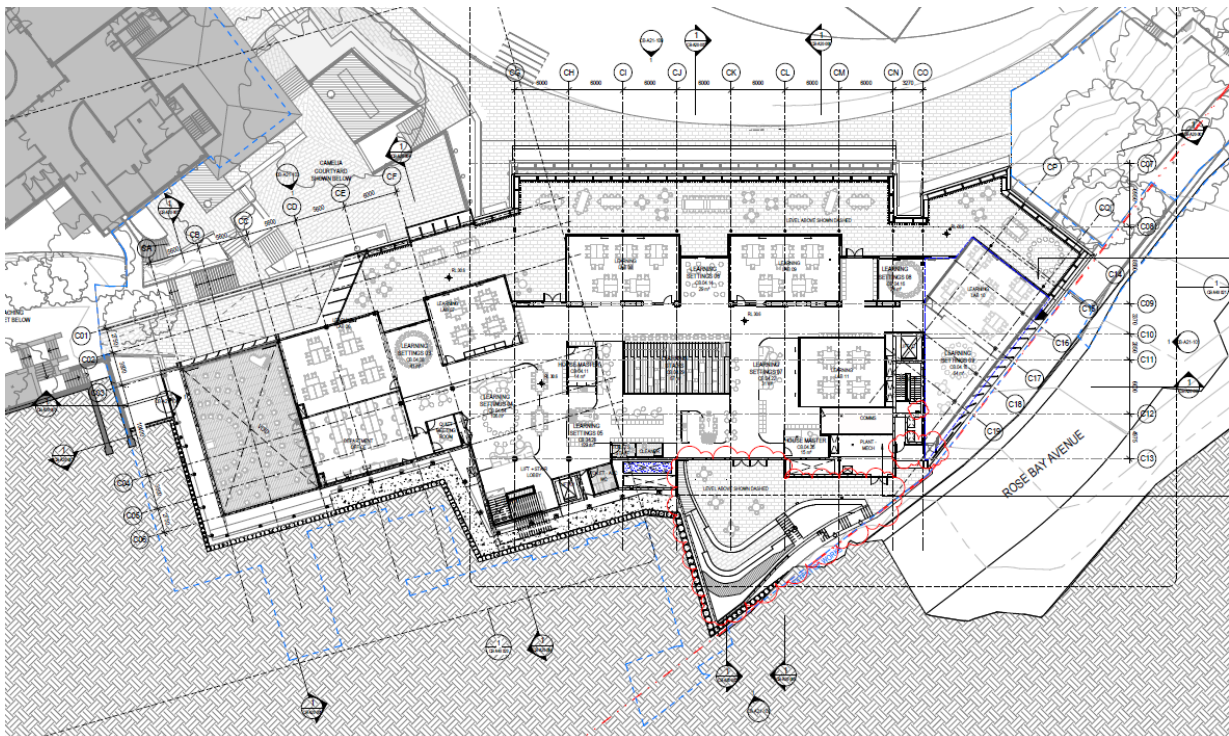


Figure 4 – The Proposed Centenary Building

- The Aquatic and Fitness Centre
 - The construction of a new 50 metre, 8 lane swimming pool, learn to swim pool, multi-purpose sports hall and fitness centre, including modifications to the existing oval to accommodate this structure 'under' the school oval.
 - The construction of an underground parking facility for 124 vehicles.

Figure 5 is an extract of the proposed development plans, produced by Architectus, showing the Aquatic and Fitness Centre and underground car park.

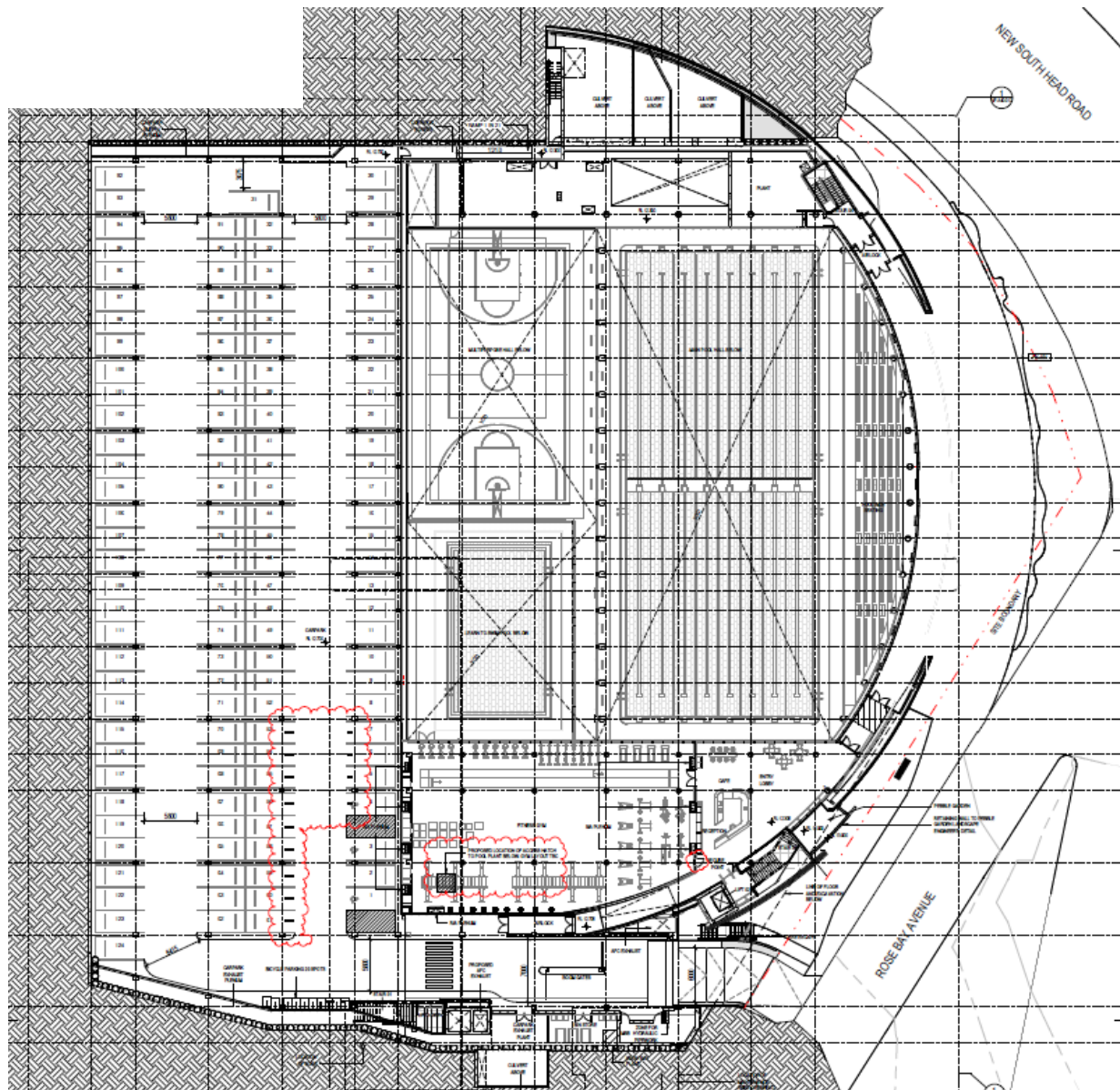


Figure 5 – The Aquatic and Fitness Centre and Car Park

The development also proposes the relocation of the existing on-street 'Drop off / Pick up' facility from Rose Bay Avenue to the existing internal driveway. Details of this facility are shown in Figure 6.

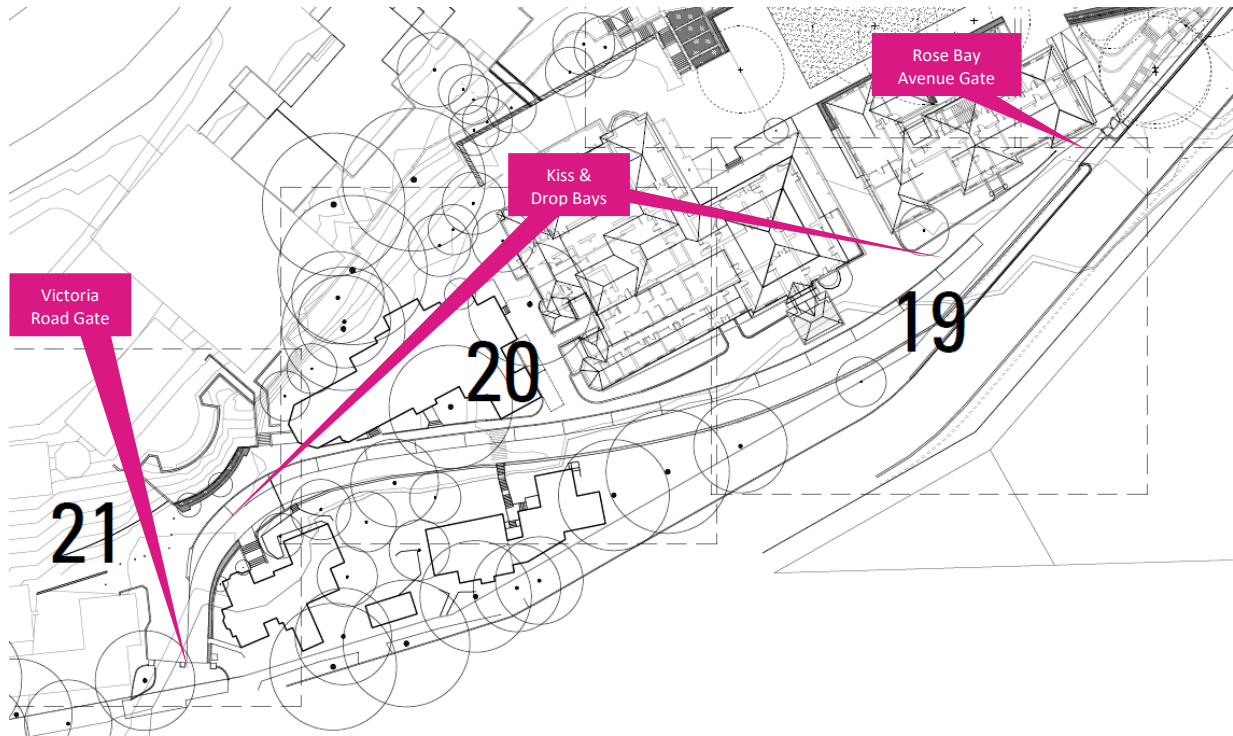


Figure 6 – The Proposed Drop Off & Pick Up facility

4. Transport Environment

4.1 Road Network

The site is located on the south west side of New South Head Road, in the suburb of Bellevue Hill and in this regard, has a good connection to the eastern Sydney arterial road network and the wider Sydney area.

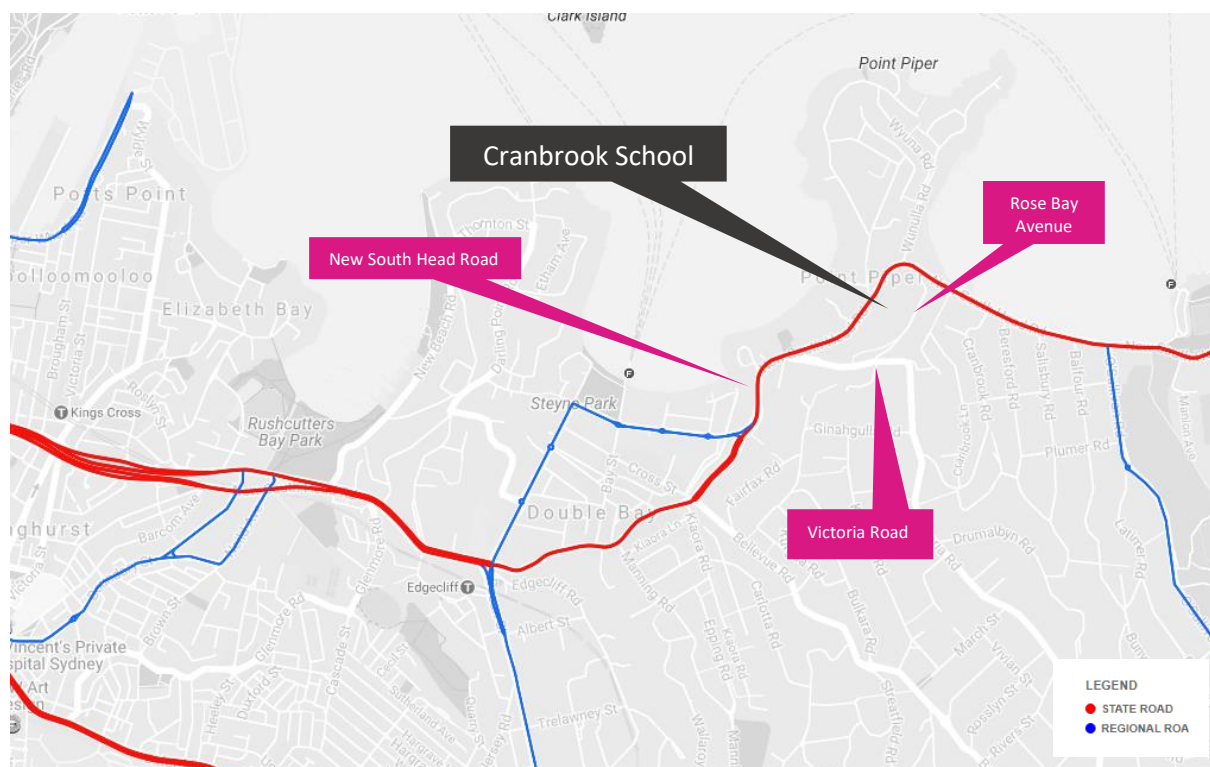


Figure 7 – Road Hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

- State Roads - Freeways and Primary Arterials (RMS Managed)
- Regional Roads - Secondary or sub arterials (Council Managed, Part funded by the State)
- Local Roads - Collector and local access roads (Council Managed)

The road network servicing the site includes:

Table 1 – New South Head Road

New South Head Road	
Road Classification	State Road
Alignment	East / West
Number of Lanes	2/3 lanes in each direction
Carriageway Type	Un-divided
Carriageway Width	18 metres
Speed Limit	60 kph (outside School Zone times)
School Zone	Yes
Parking Controls	Eastbound - ½P 9am to 4pm Mon to Friday, No parking 4pm to 6pm Westbound – un-restricted
Site Frontage	Yes



Figure 8 – New South Head Road – Westbound towards Victoria Road

Table 2 – Victoria Road

Victoria Road	
Road Classification	Local Road
Alignment	East / West
Number of Lanes	1 lane in each direction
Carriageway Type	Un-divided
Carriageway Width	12 metres
Speed Limit	50 kph (outside School Zone times)
School Zone	Yes
Parking Controls	Un-restricted
Site Frontage	Yes



Figure 9 – Victoria Road – Westbound towards School Entry Gate

Table 3 – Rose Bay Avenue

Rose Bay Avenue	
Road Classification	Local Road
Alignment	North / South
Number of Lanes	1 lane in each direction
Carriageway Type	Un-divided
Carriageway Width	10 metres
Speed Limit	50 kph (outside School Zone times)
School Zone	Yes
Parking Controls	Un-restricted, with school drop off zone at peak times
Site Frontage	Yes



Figure 10 – Rose Bay Avenue – Northbound towards School Exit Gate

4.2 Key Intersections

The key intersections within the vicinity of the site and their configurations are listed below and shown in Figure 11.

- New South Head Road and Victoria Road – three arm signalised intersection
- Victoria Road and Rose Bay Avenue - three arm priority controlled intersection
- New South Head Road and Rose Bay Avenue – three arm priority controlled intersection, left in / left out
- New South Head Road and Wolesley Road - three arm signalised intersection

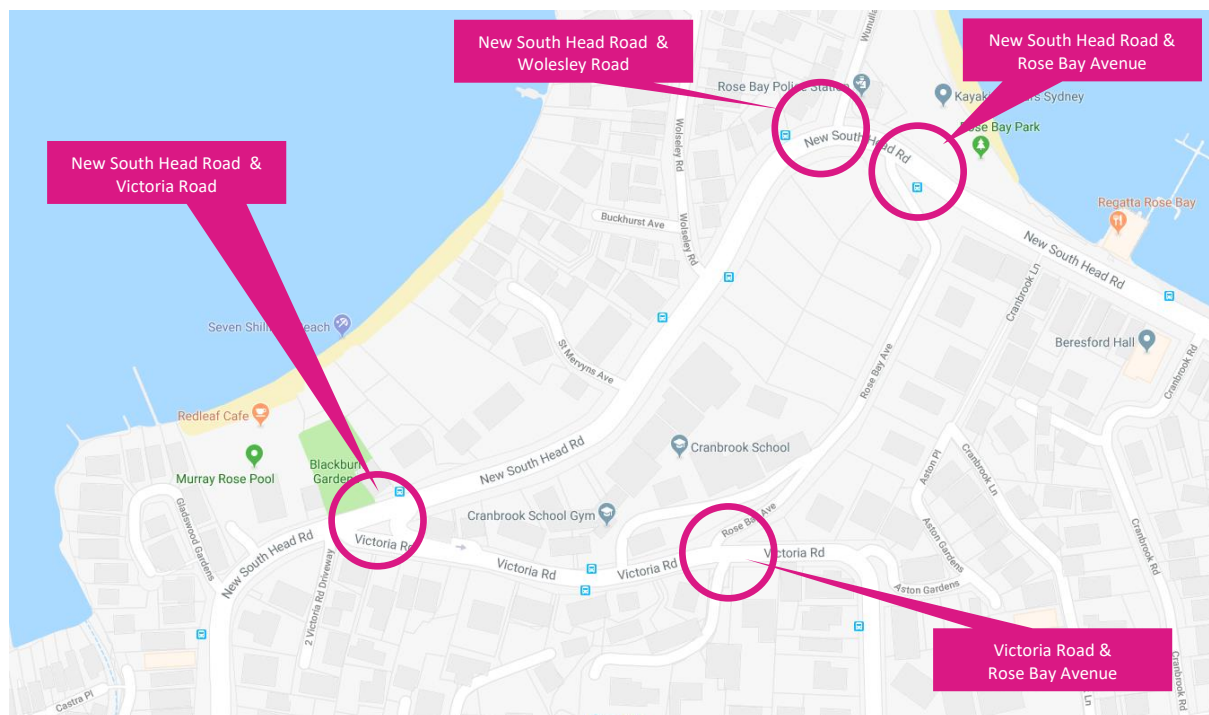


Figure 11 – Key Intersections

4.3 Pedestrian Facilities

Facilities are available to the public within the vicinity of the site. These facilities are summarised in Table 4 and shown in Figure 12

Table 4 – Pedestrian Facilities

Road	Pedestrian Facilities
New South Head Road	North Side – 3.5m wide footway
	South Side – 3.5m wide footway
	Signal controlled pedestrian crossing on the western arm of New South Head Road / Victoria Road intersection Signal controlled crossings on all arms of the New South Head Road / Wolsey Road intersection
Victoria Road	North Side – 1.5 to 2m side footway
	South Side - 1.5 to 2m side footway
	'Zebra Crossing' on eastern side of school entrance
Rose Bay Avenue	North Side – 1.0 to 1.5m wide footway
	South Side – 1.5 to 2.0m wide footway



Figure 12 – Pedestrian Facilities

4.4 Bicycle Network

Woollahra Municipal Council has developed the Woollahra Bicycle Strategy 2009, which reviewed the 'Woollahra Waverly Bike Plan 2000' and set out to develop a bicycle strategy for future implementation.

The key elements of the bicycle strategy are;

- Completing major (regional) routes that provide regional connectivity;
- Every Street a Cycling Street – promoting and facilitating cycling on all local roads with minimum new construction;
- Recreational routes for safe and family-friendly cycling in the vicinity of parks and reserves;
- Developing cycle facilities at/to public transport Interchanges and urban villages;
- Integrated policies and planning instruments – inclusion of cycle facilities and considerations within road construction and maintenance programs as well as in development planning; and
- Targets to provide a balance between civil works and encouraged programs, including a ride-to-school strategy to develop sustainable travel habits and cycling confidence from a young age.

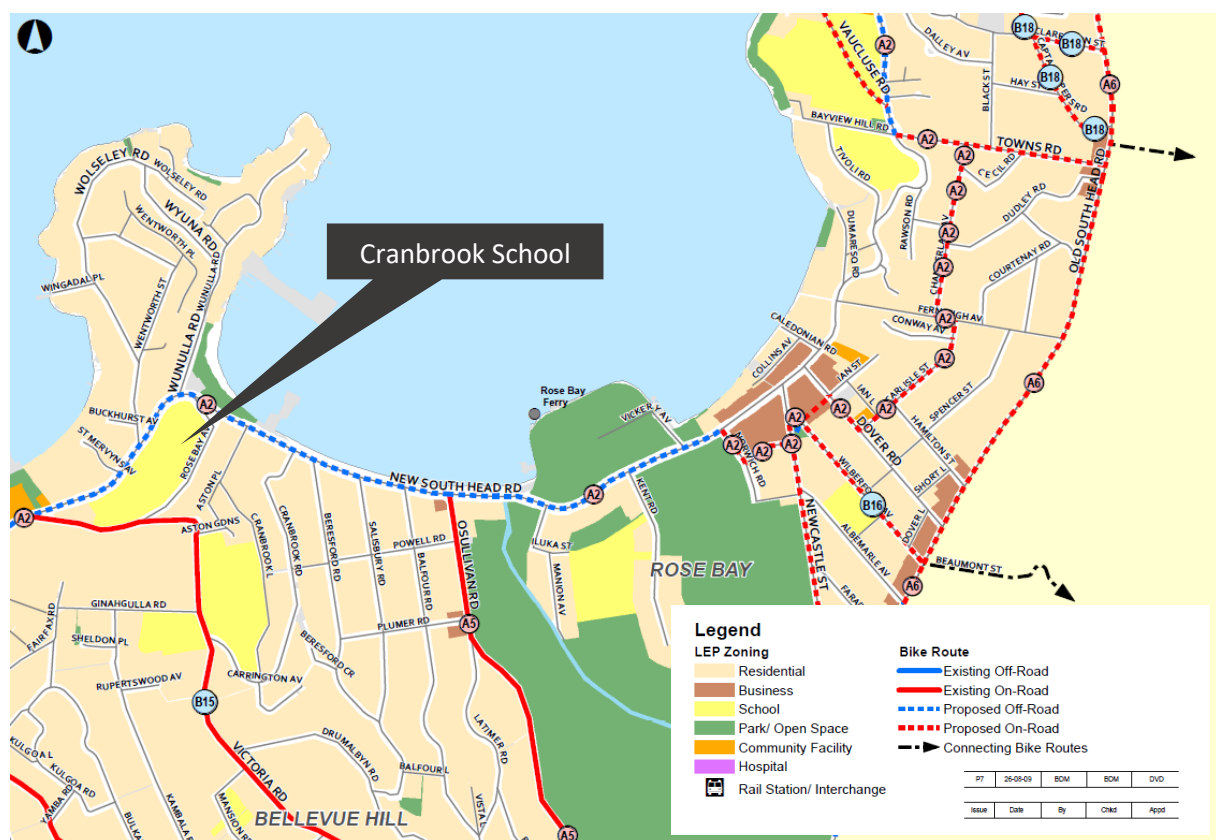


Figure 13 – Local Bicycle Network (Source:Woollahra Municipal Council)

As shown in Figure 13, the school is served by an existing on-road cycle route along Victoria Road and a proposed off-road route along New South Head Road. These routes provide access to the local cycle network and links to the greater Sydney cycle network.

4.5 Bus Services

The site is well serviced by buses that operate from the following 7 bus stops in close proximity to the site

- New South Head Road: Routes – 323, 324, 325 and L24
- Victoria Road: Route 326

These services are operated by Sydney Bus Network and the bus stop locations are shown in Figure 14:

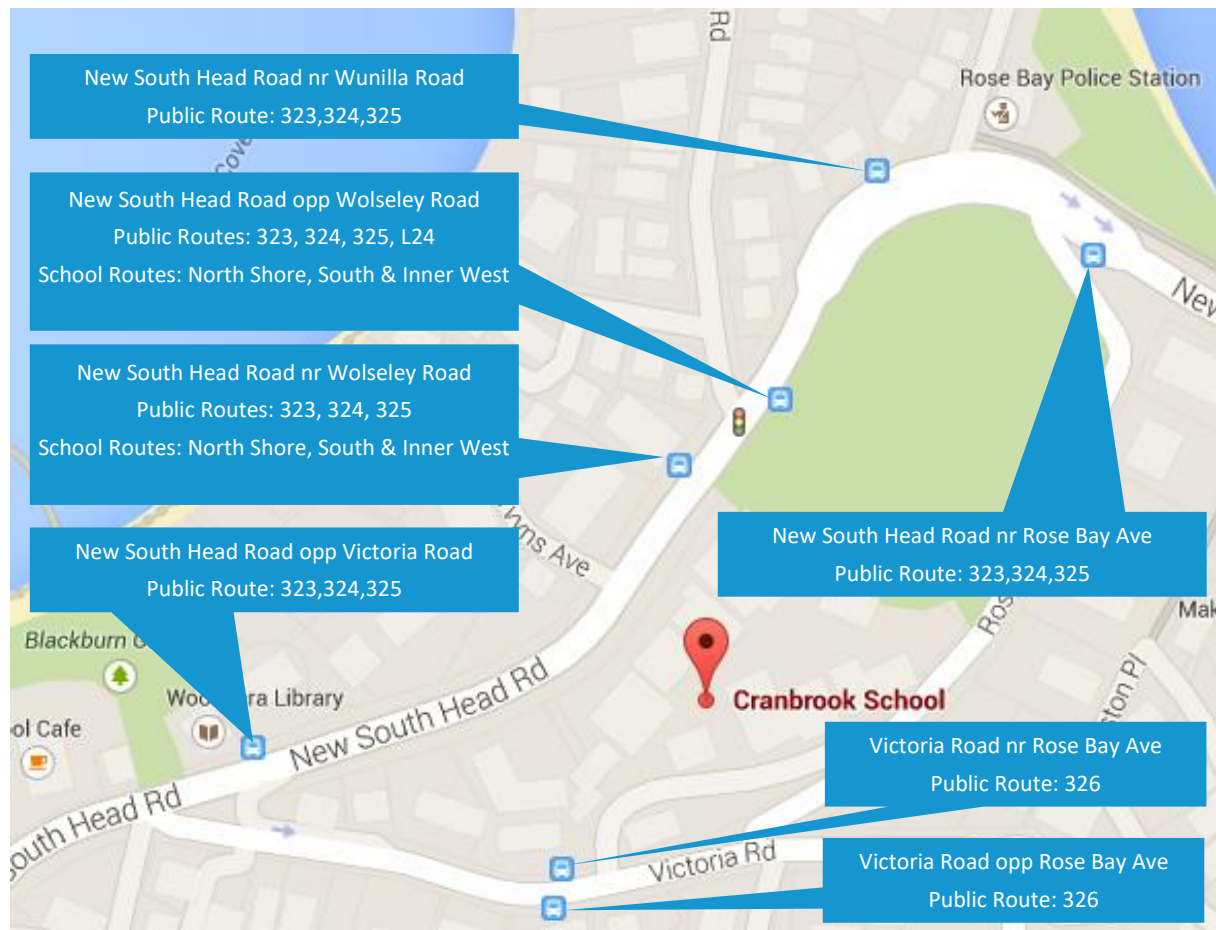


Figure 14 – Bus Services

These services run between 04:30 and 00:30 and provide access from the local area to the City at approximately 30 minute intervals, with additional services at peak times.

In addition to the STA bus routes services Cranbrook School, the school operates three private services;

- North Shore Bus Services;
- South; and
- Inner West Services.

The routes are operated by the school and drop off and pick up students at the STA bus stop located on New South Head Road at the corner of Wolseley Road.

4.6 Ferry Services

The site is located a distance of approximately 1200 metres from Double Bay Wharf.

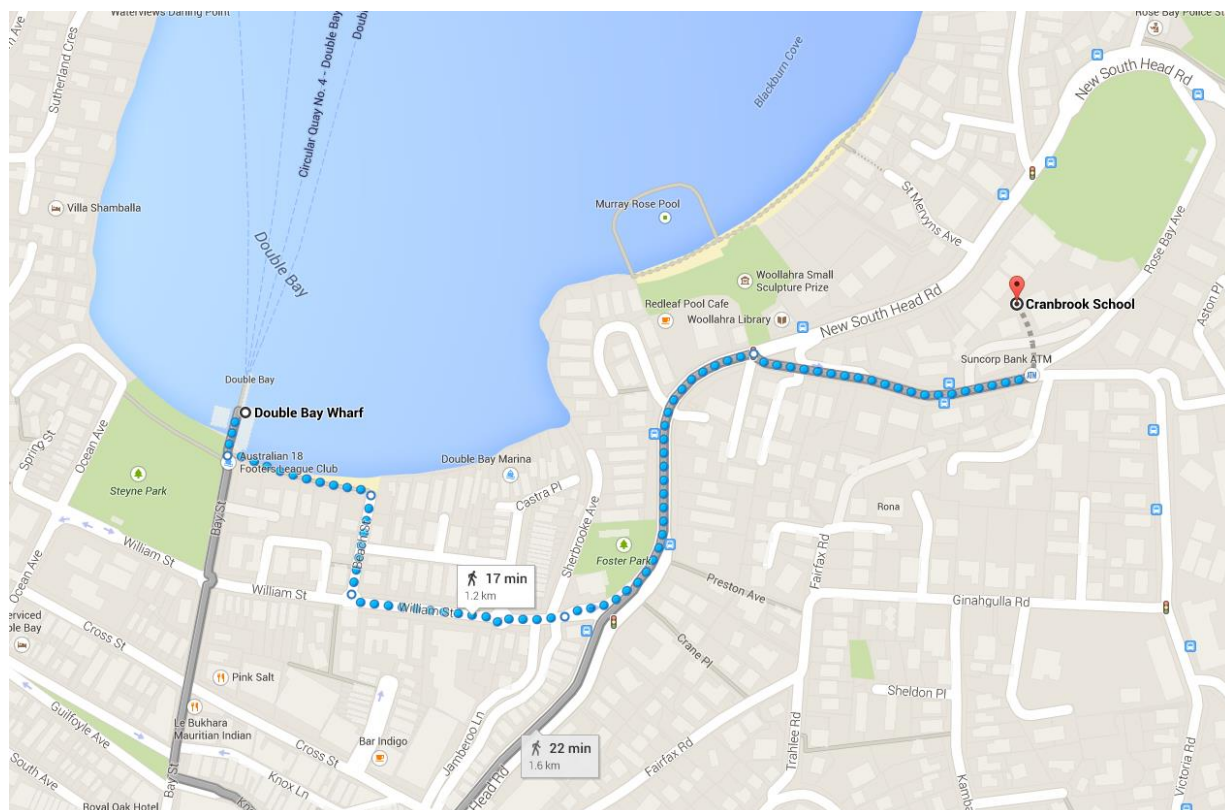


Figure 15 – Ferry Services

Double Bay Wharf is operated by Sydney Ferries and operates the F7 Eastern Suburbs service between Circular Quay and the Eastern Suburbs and are summarised as follows;

F7 Eastern Suburbs:

- Circular Quay to Double Bay – approximately 30 minutes intervals between 07:00 and 21:00
- Double Bay to Circular Quay – approximately 30 minute intervals between 06:50 and 19:20

5. Traffic Management Plan

5.1 Objective

The traffic management plan associated with the construction activity aims to ensure the safety of all workers and road users within the vicinity of the construction site and the following are the primary objectives:

- To minimise the impact of the construction vehicle traffic on the overall operation of the road network;
- To ensure continuous, safe and efficient movement of traffic for both the general public and construction workers;
- Installation of appropriate advance warning signs to inform users of the changed traffic conditions;
- To provide a description of the construction vehicles and the volume of these construction vehicles accessing the construction site;
- To provide information regarding the changed access arrangement and also a description of the proposed external routes for vehicles including the construction vehicles accessing the site; and
- Establishment of a safe pedestrian environment in the vicinity of the site.

5.2 Hours of Work

All works, associated with the project will be restricted to the time periods by the Conditions of Consent. The School is proposing the following working hours associated with the construction activity:

- Monday to Friday 7:00am to 5.30pm;
- Saturdays 7:00am to 3.30pm;
- Sunday or public holidays No works to be undertaken without prior approval

5.3 General Requirements

In accordance with Road and Maritime Services (RMS) requirements, all vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site. All subcontractors must be inducted by the lead contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The lead contractors will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

5.4 Construction Vehicle Types

Construction vehicles likely to be required during the works and their likely use are outlined in Table 5.

Table 5 – Construction Vehicles

Vehicle Type	Use
19m articulated truck	Delivery of heavy plant and materials
Truck and Dogs	Removal of excavated and demolished material
Rigid Trucks (up to 12.5m in length)	Delivery of plant and material
Concrete Agitators	Concrete delivery
Small rigid vehicles and utes/vans	Delivery of small plant and material
Private vehicles (construction & public)	Construction, management, school staff

During the peak construction periods, it is estimated that the construction activity is likely to generate between 30 to 40 vehicle movements per day on non-school days and 20 to 30 movements on school days (3-4 vehicles per hour).

A management system will be put in place to:

- Stagger all contractors' deliveries to ensure that back logs do not occur with multiple deliveries arriving at the same time.
- The provision of standing areas within the site, for vehicles up to Truck and Dog to wait to be loaded/unloaded.
- Traffic control measures to be in place at all entry and exit points to the site outlined in Section 5.7.
- Works to be sequenced so that activities that require multiple deliveries (i.e. concrete pours and removal of spoil) do not occur at the same time.
- Prefabrication (wherever possible) of materials off site.

With reference to the work hours outlined in Section 5.2, additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic to further mitigate conflicts.

Subject to work activity requirements spoil removal off site will be maximised during school holidays where possible.

5.5 Construction Vehicle Routes

The site is located in the suburb of Bellevue Hill and the proposed vehicle construction routes have regard for the surrounding traffic arrangements within the vicinity of the site.

5.5.1 Primary Construction Vehicle Routes

The primary construction vehicles routes are illustrated in Figure 16



Figure 16 – Primary Construction Vehicle Access and Egress Routes

Access –

- All vehicles will access the site from the west via New South Head Road and turn right into Victoria Road.
- Vehicles will then proceed eastbound along Victoria Road to access Rose Bay Avenue and the designated site access gate, dependent on the stage of the works in progress.

Egress –

- Vehicles will exit the site via Rose Bay Avenue and a left turn into New South Head Road and proceed westbound along New South Head Road to join the wider road network.

To assess their suitability for the proposed construction vehicle swept path analysis has been undertaken on the three key intersections:

- New South Head Road and Victoria Road
- Victoria Road and Rose Bay Avenue
- New South Head Road and Rose Bay Avenue

The swept path analysis has been undertaken using the largest vehicle expected (19m Truck and Dog) and is shown in Figure 17, Figure 18 and Figure 19.

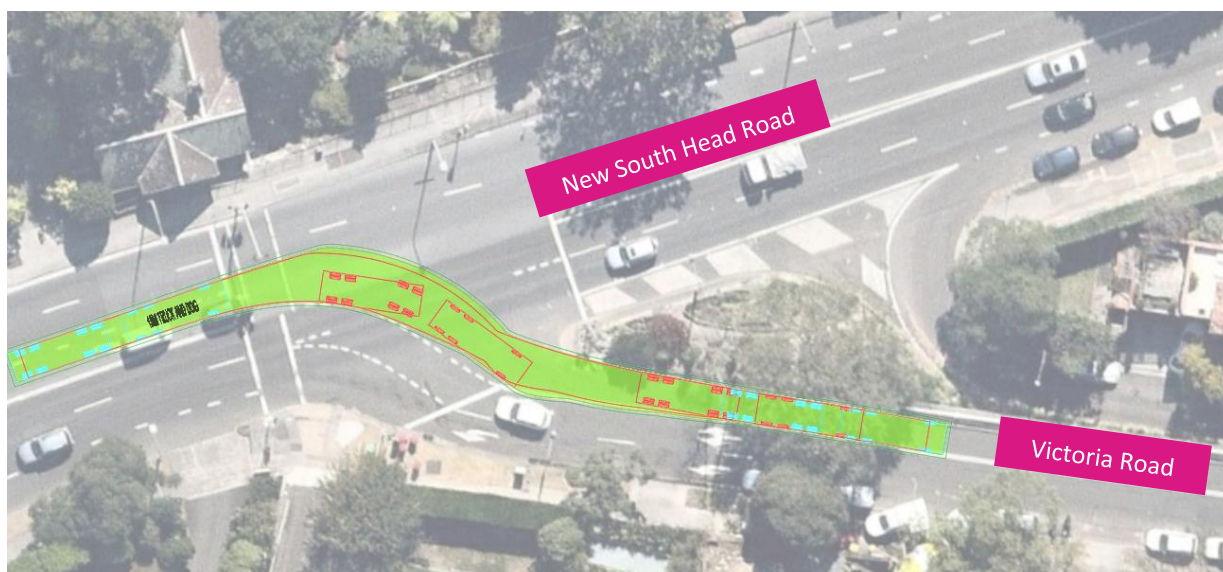


Figure 17 – New South Head Road and Victoria Road

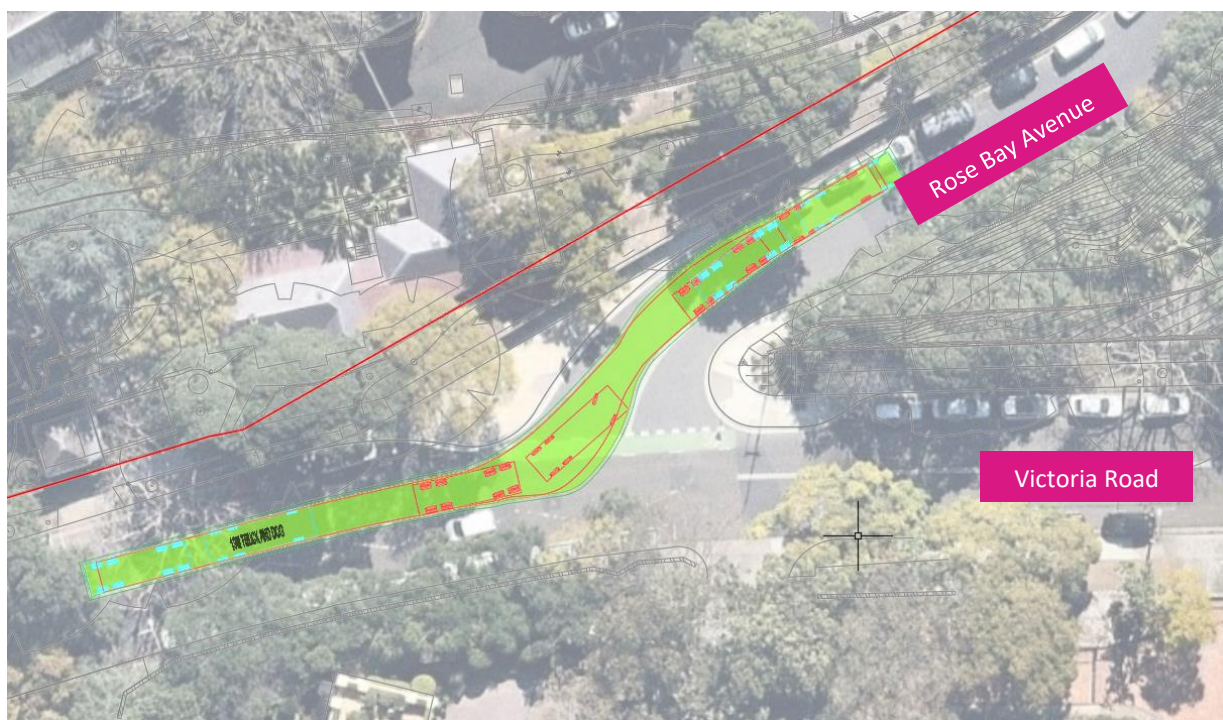


Figure 18 – Victoria Road and Rose Bay Avenue

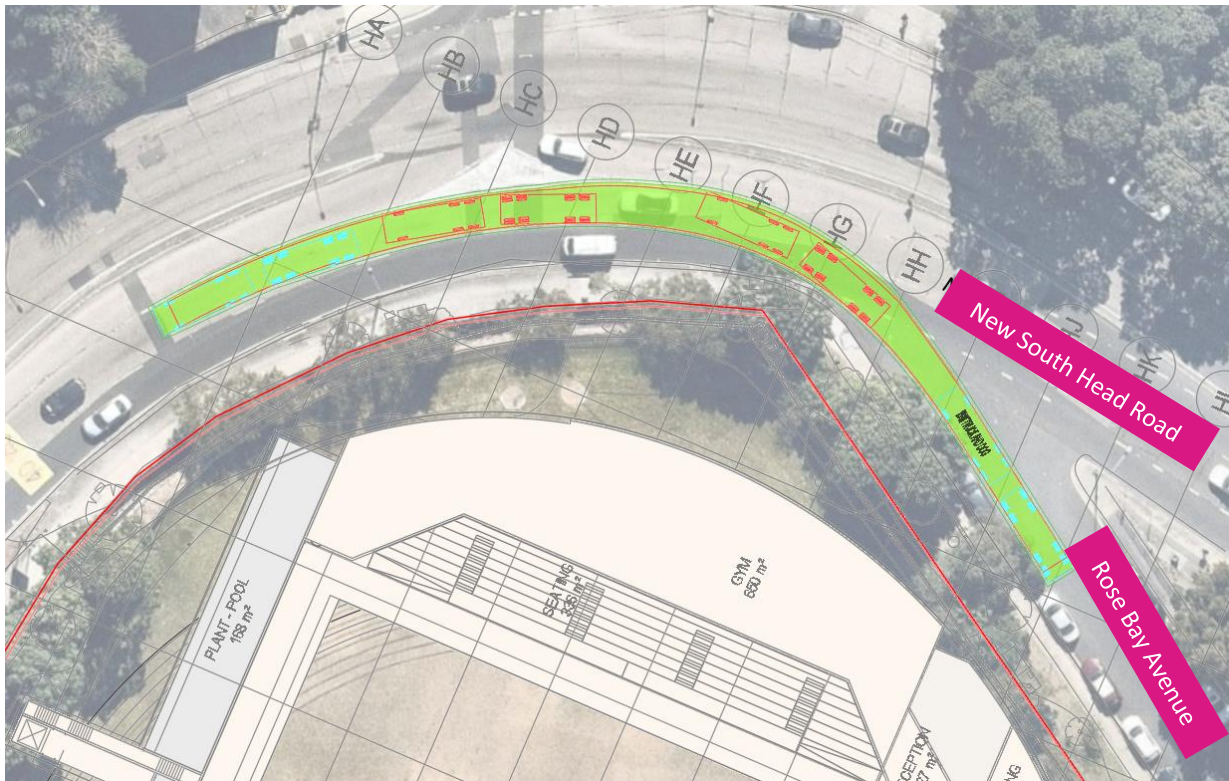


Figure 19 – New South Head Road and Rose Bay Avenue

5.5.2 Secondary Construction Vehicle Routes

A secondary construction vehicle route may be utilised, should a site at Royal Sydney Golf Club (RSGC) become available for the disposal of spoil.

The secondary construction vehicle routes are shown in Figure 20.

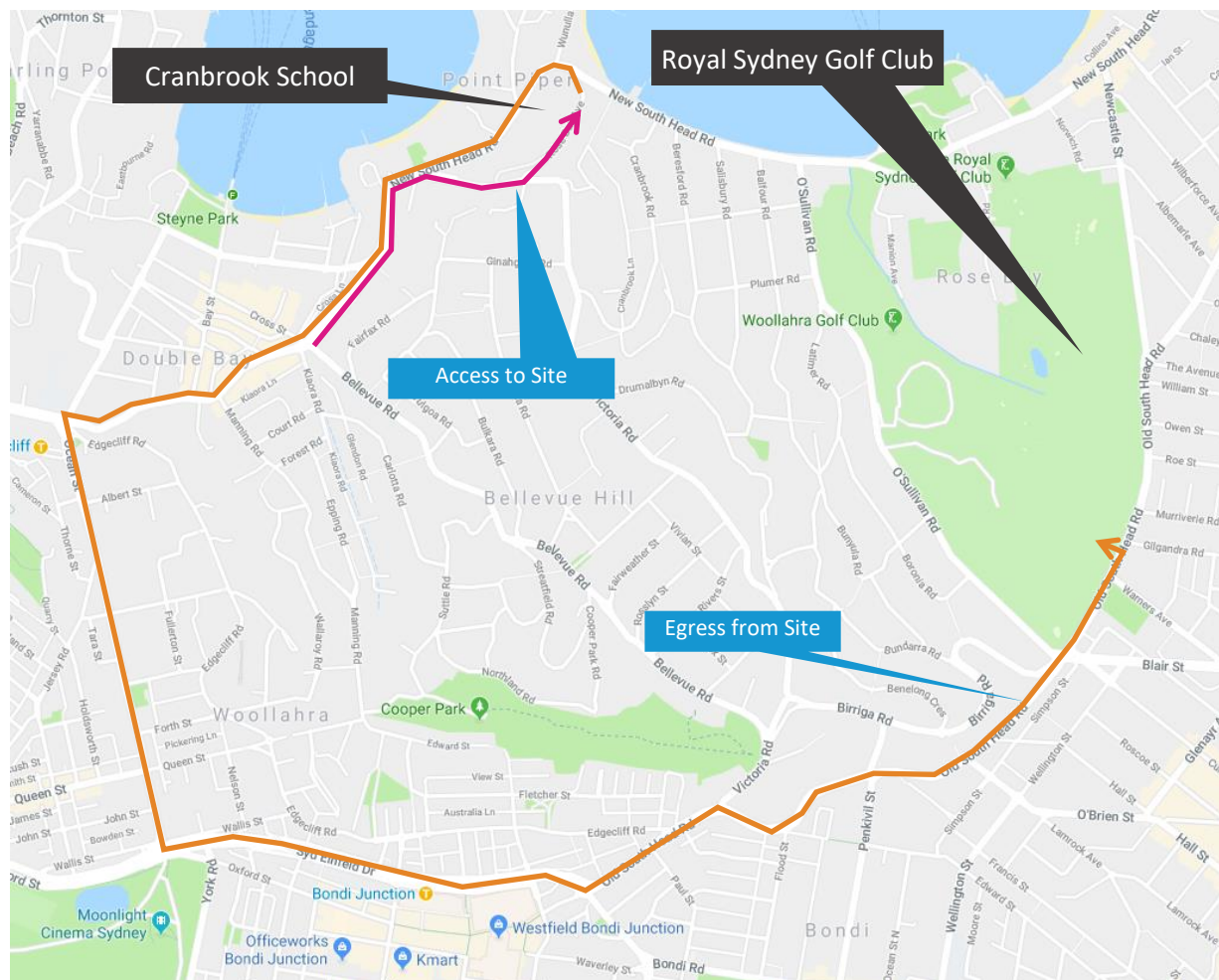


Figure 20 – Secondary Construction Vehicle Access and Egress Routes

Access –

- All vehicles will access the site from the west via New South Head Road and turn right into Victoria Road.
- Vehicles will then proceed eastbound along Victoria Road to access Rose Bay Avenue and the designated site access gate, dependent on the stage of the works in progress.

Egress –

- Vehicles will exit the site via Rose Bay Avenue and a left turn into New South Head Road.
- Vehicles would then proceed westbound along New South Head Road and turn left onto Ocean Street.
- At the intersection of Ocean Street and Sydney Enfield Drive, vehicles would utilise the right hand lane to turn left on to Sydney Enfield Drive.

- Vehicles then proceed east along Sydney Enfield Drive and at the intersection with Old South Head Road, use the right lane to turn left (onto Old South Head Road).
- Vehicles then travel northbound on Old South Head Road and enter RSGC via the double gates approximately 50 metres south of Gilgandra Road.

To assess their suitability for the proposed construction vehicle swept path analysis has been undertaken on the three key intersections:

- New South Head Road and Ocean Street
- Ocean Street and Sydney Enfield Drive
- Sydney Enfield Drive and Old South head Road
- Old South Head Road and Royal Sydney Golf Club Entrance

The swept path analysis has been undertaken using the largest vehicle expected (19m Truck and Dog) and is shown in Figure 21, Figure 22, Figure 23 and Figure 24.



Figure 21 – New South Head Road and Ocean Street

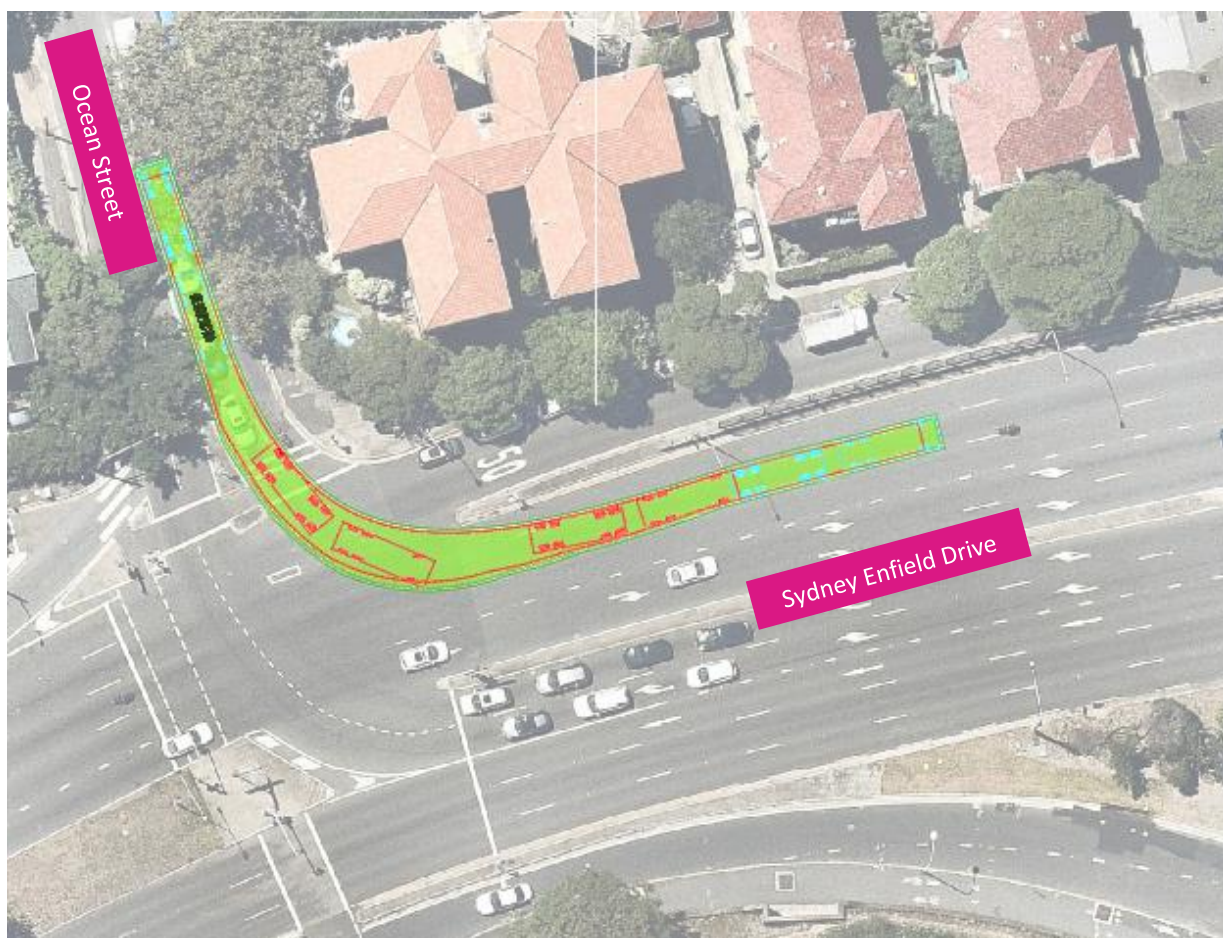


Figure 22 –Ocean Street and Sydney Enfield Drive



Figure 23 – Sydney Enfield Drive and Old South Head Road



Figure 24 – Old South Head Road and Golf Club Entrance

5.6 Construction Program and Process

The project is intended to be undertaken in seven major stages, with the major milestones, as outlined in Table 6.

Table 6 – Construction Program and Milestones

Proposed Development Stage	Programed Dates (subject to approvals)
Site Establishment	Mid 2019
Internal Drop off and pick up zone	Mid 2019
Demolition & Excavation Works	Mid 2019 to late 2020 (15 months)
Centenary Building Construction	Late 2020 to late 2022 (24 months)
Aquatic and Fitness Centre Excavation and Construction	Late 2020 to mid 2022 (18 months)
Car Park Construction and early handover for use by school staff	Early to mid 2022
Reinstate Oval Surface	Late 2021

The traffic management plan for the development is outlined in the following sections and shown on drawings 2288C/CCTMP-001 to 008 found in Attachment 1 of this report.

It should be noted that Cranbrook wish to operate under unrestricted vehicular movement time frames and carefully manage pedestrian and traffic safety by having additional traffic controllers at Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school, the general public and construction traffic and further mitigate possible conflicts.

5.6.1 Site Establishment

The site establishment will commence in mid-2019 and access and egress to the site will be via Gates 1A, 1B and Gate 3 (egress only), as shown in Figure 25 and Attachment 1

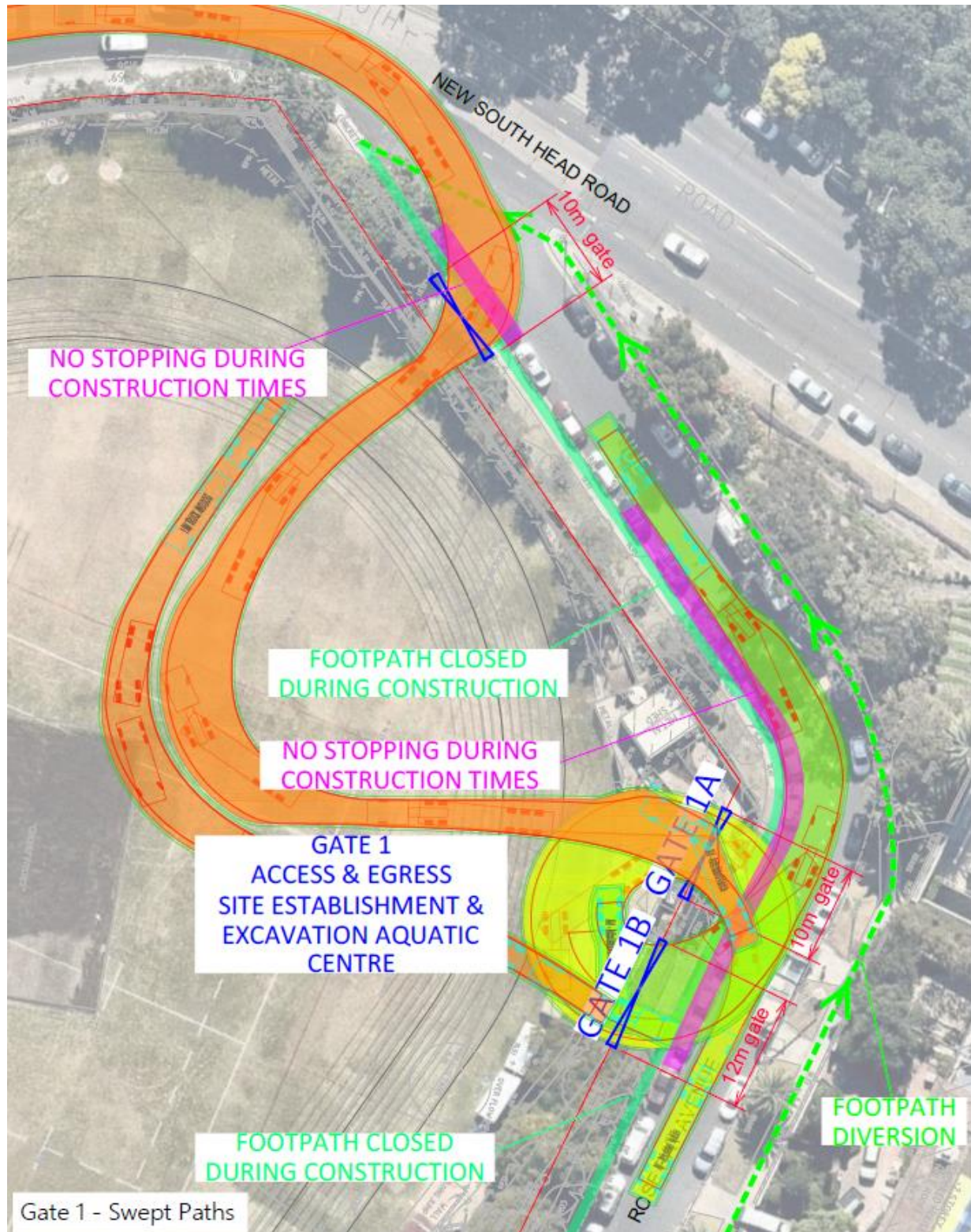


Figure 25 – Gate 1A, Gate 1B and Gate 3

Construction vehicles will access the site eastbound along Rose Bay Avenue and access the site via Gate 1A or Gate 3. Vehicles will then egress the site via Gate 1B or Gate 3 and re-join the external road network via a left turn onto New South Head Road.

During this stage of the works, vehicle sizes are to be up to 19m semi articulated vehicles and 19m Truck and Dogs.

Gate 1A will be 10m wide, Gate 1B will be 12m wide and Gate 3 will be 10m wide and access & egress to these gates will be managed by traffic controllers at all times and traffic management will be provided which is discussed further in Section 5.7.

It should be noted that additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic and further mitigate possible conflicts.

Gate 1 will also be used in some stages of the construction of the Aquatic Centre and this is discussed further in Section 5.6.5

Alterations to the existing parking restrictions will be required to provide a 'No Stopping' zone in the vicinity of the gates as shown in Figure 26.

All other parking restrictions along the western side of Rose Bay Avenue will be unaffected during this stage of works.

In conjunction to these changes the footway along the site frontage will be closed to pedestrians and pedestrians will be diverted onto the eastern footway on Rose Bay Avenue. This is discussed further in Section 5.10

5.6.2 Internal Drop off / Pick Up Zone

During the construction of the development, the drop off and pick up facility will be relocated to the existing internal driveway located within the School site, as shown in Figure 27 and in Attachment 1.



Figure 27 – Pick up and Drop Off

Upon commencement of the works, the 'Kiss and Drop' facility will be relocated to the internal driveway.

Parents will access the facility via the Victoria Road gate and exit the facility via the Rose Bay Avenue gate and the 'Kiss and Drop' will operate as a 'head of the queue' system, with the capacity of up to 18 vehicles at any one time.

The existing staff parking within the driveway will be maintained, prior to being relocated to the underground car park (when completed) and access to the staff parking in this area will be limited to outside of the pick up and drop off activity and traffic management will be in place to define the vehicular and pedestrian areas.

Signage will be placed to inform and direct traffic to the Kiss & Drop area with pedestrian barriers and cones erected during operation times to delineate the different areas. It should be noted that additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic and further mitigate possible conflicts.

Details of the traffic control are shown on Figure 27 and are discussed further in Section 5.7.

Following completion of the underground car park, the existing parking will be relocated to the underground car park. It should be noted that the construction contract requests the completion of the underground car park as soon as possible, to enable the staff parking in this area to be relocation at the earliest opportunity. Upon relocation of the staff parking, the internal driveway will be utilised for the 'Kiss and Drop' facility only.

5.6.3 Demolition Works

During the demolition of the existing War Memorial and Mansfield buildings, an internal works zone will be provided and access and egress to this will be via Gate 2A and Gate 2B. In conjunction with this, an external work zone is proposed on Rose Bay Avenue. Details of these facilities are shown on Figure 28 and Attachment 1

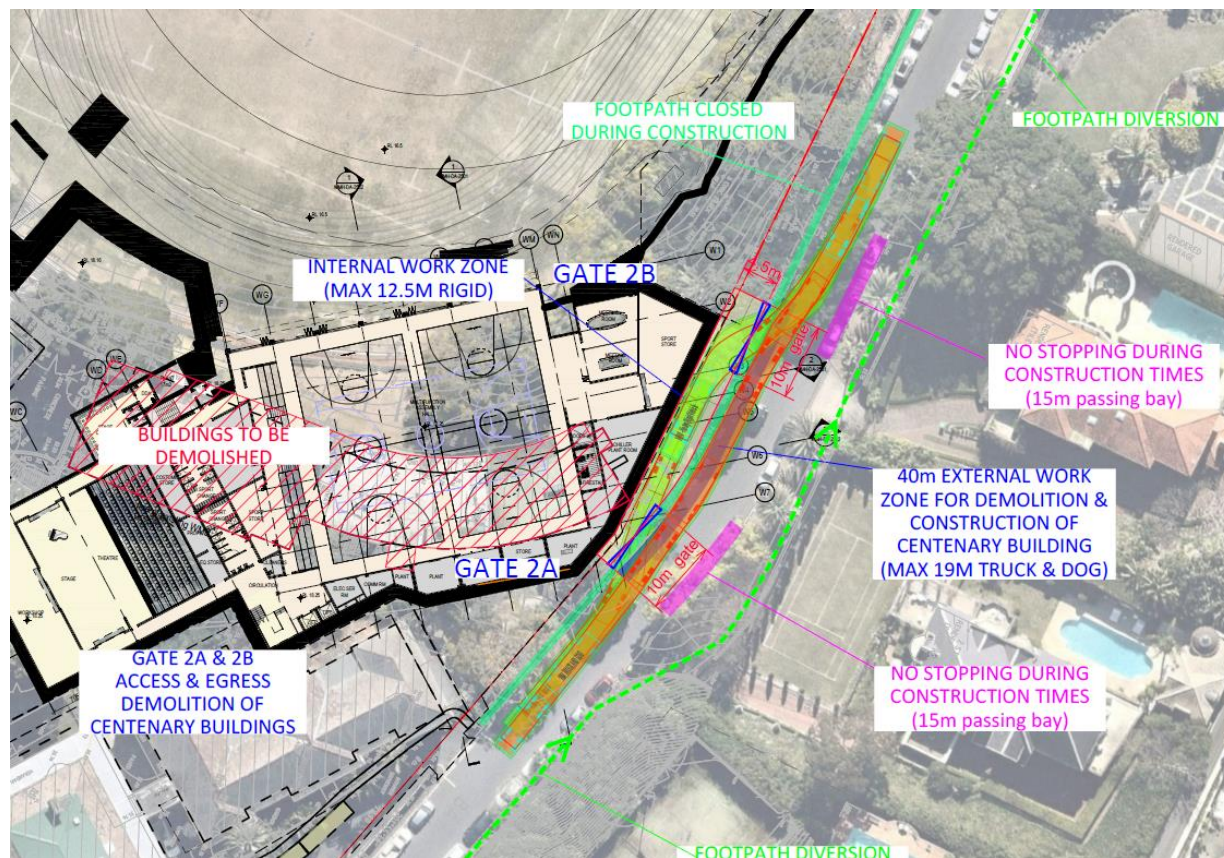


Figure 28 – Gate 2a and Gate 2B

Construction vehicles will access the Gate 2A and the external work zone, eastbound along Rose Bay Avenue. Vehicles will then both egress the external work zone or the site via Gate 2B and proceed eastbound along Rose Bay Avenue to re-join the external road network via a left turn onto New South Head Road.

During this stage Gates 1 and 3 will also be utilised, as described in Section 5.6.1

Vehicle sizes are to be up to 19m Truck and Dog (within the external work zone) and 12.5 Rigid Vehicles (within the internal work zone). Details of the work zone can be found in Figure 28 and Attachment 1 and are discussed further in Section 5.8.

Gate 2A will be 10m wide and Gate 2B will be 10m wide and access & egress to these gates will be managed by traffic controllers at all times and traffic management will be provided which is discussed further in Section 5.7.

It should be noted that additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic and further mitigate possible conflicts.

Alterations to the existing parking restrictions will be required to provide 'No Stopping' zones opposite the two gates to provide passing areas for vehicles and a work zone on Rose Bay Avenue, as shown in Figure 29 .

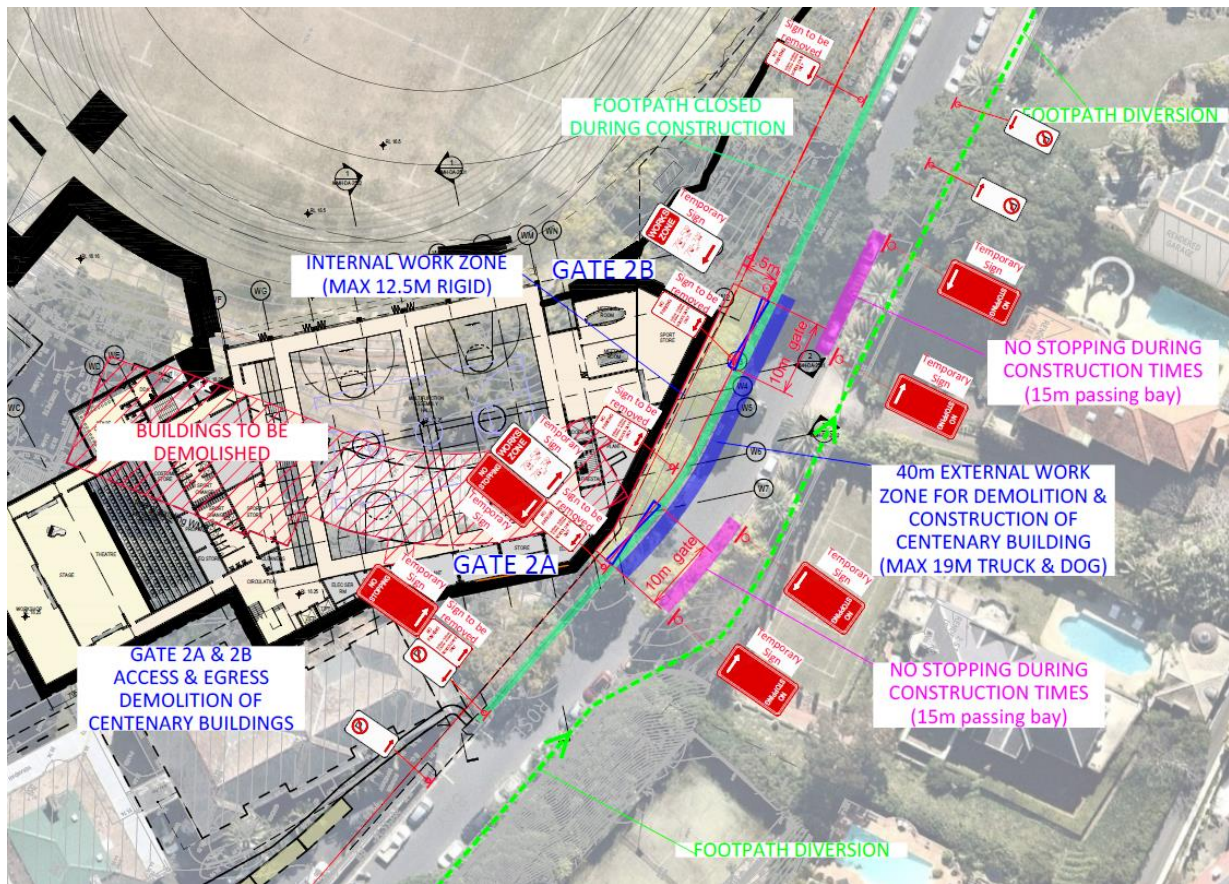


Figure 29 – Gate 2a and Gate 2B – signage alterations

In conjunction to these changes the footway along the site frontage will be closed to pedestrians and pedestrians will be diverted onto the eastern footway on Rose Bay Avenue. This is discussed further in Section 5.10

5.6.4 Centenary Building Construction

Construction vehicle access for the construction of the Centenary Building is proposed from two locations, dependent on the stage of construction. Vehicle sizes during this stage of the works are likely to be up to 19m Truck and Dog.

Access will be via Gate 2A, as described in Section 5.6.3, and via Gate 4. Access to both gates will be eastbound along Rose Bay Avenue and enter the site at either Gate 2, Gate 4 or utilise the Work Zone adjacent to Gate 2.

Vehicles will then egress the external work zone or the site via Gate 2B or Gate 4 and then proceed eastbound along Rose Bay Avenue to re-join the external road network via a left turn onto New South Head Road.

Dependant on the stage of construction of the Aquatic and Fitness Centre, Gate 3 will also be utilised during this stage of the works.

Gate 4 will be 10 metres wide and will require the construction of a (approximate) 45-metre-long, 5-metre-wide ramp, with a maximum grade of 1 in 6.5, to enable vehicles to proceed from Rose Bay Avenue to the Oval. Full details of the ramp configurations and construction are included in the Construction Management Plan.

Access & egress to these gates will be managed by traffic controllers at all times and traffic management will be provided which is discussed further in Section 5.7.

It should be noted that additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic and further mitigate possible conflicts.

Alterations to the existing parking restrictions will be required to provide a 'No Stopping' zone in the vicinity of the gates as shown in Figure 30.

The configuration and vehicle swept paths of Gate 4 are shown in Figure 30 and Attachment 1

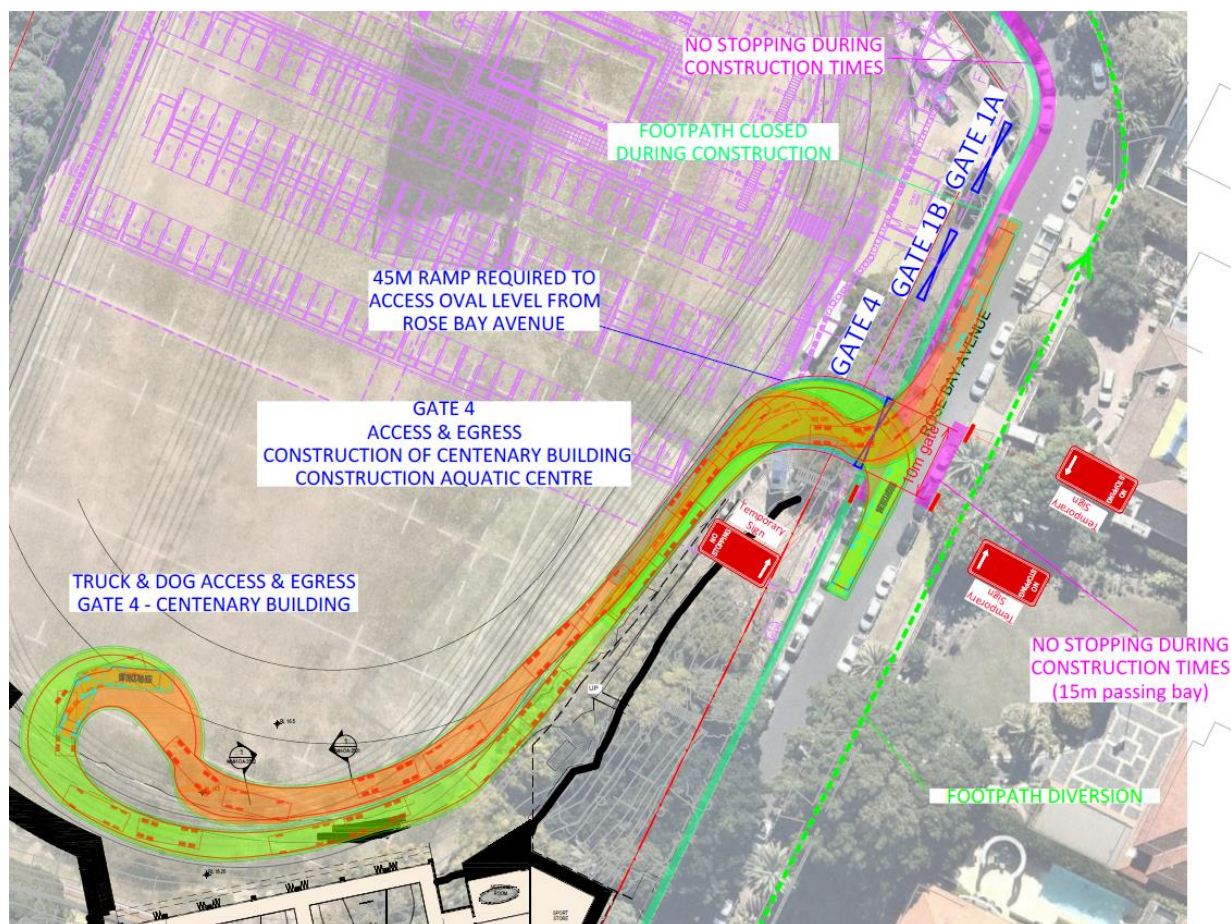


Figure 30 – Gate 4

In conjunction to these changes the footway along the site frontage will be closed to pedestrians and pedestrians will be diverted onto the eastern footway on Rose Bay Avenue. This is discussed further in Section 5.10.

5.6.5 Aquatic and Fitness Centre and Car Park Construction

During the excavation construction of the Aquatic and Fitness Centre and Car Park, site access and egress will be via three locations. Vehicles will utilise Gates 1 and Gate 4, as discussed in Section 5.6.1 and Section 5.6.4. In addition to these gates, access and egress will also be undertaken via Gate 3 and an external work zone located on Rose Bay Avenue.

Access to Gate 3 will be limited to 8.8m Medium Rigid Vehicles (including concrete agitators) and the external work zone will accommodate 19m Truck and Dogs.

Gate 3 will be 10m wide and access & egress to these gates and the work zone will be managed by traffic controllers at all times and traffic management will be provided which is discussed further in Section 5.7.

It should be noted that additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic and further mitigate possible conflicts.

Details of Gate 3 and the vehicle movements are shown in Figure 31 and Attachment 1.

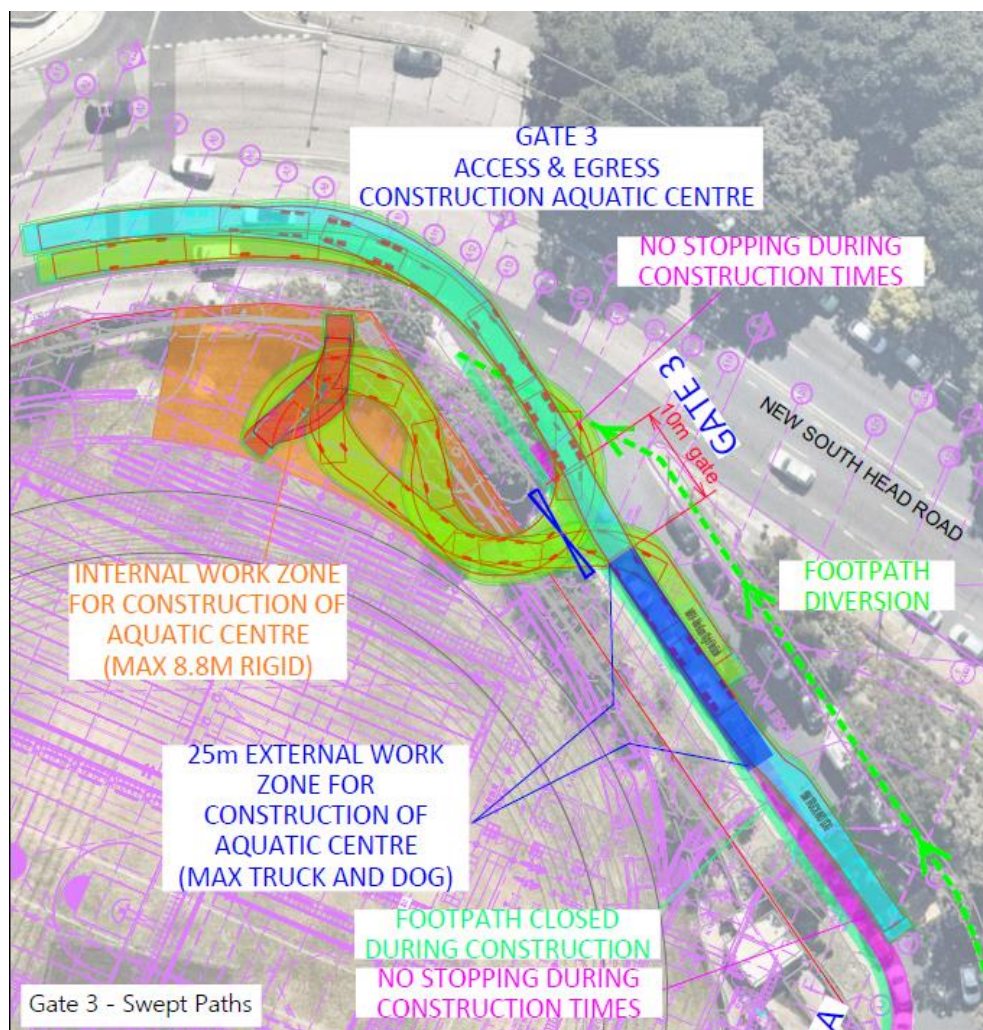


Figure 31 – Gate 3

Alterations to the existing parking restrictions will be required to provide 'No Stopping' zones opposite the two gates to provide passing areas for vehicles and a work zone on Rose Bay Avenue, as shown in Figure 32.

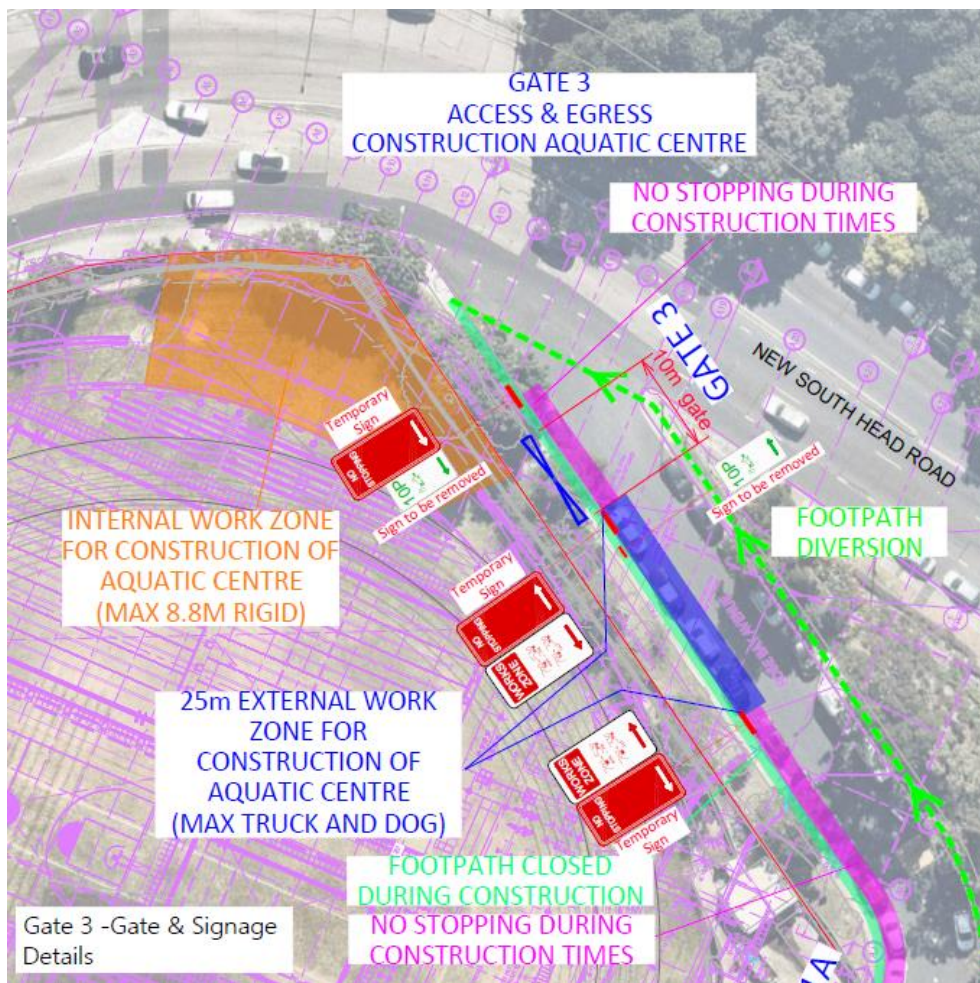


Figure 32 – Gate 3 signage alterations

In conjunction to these changes the footway along the site frontage will be closed to pedestrians and pedestrians will be diverted onto the eastern footway on Rose Bay Avenue. This is discussed further in Section 5.10

5.6.6 Oval Reinstatement

To Undertake the Oval Reinstatement, access to the site will be via Gate 1, Gate 3 and Gate 4, dependent on the stage of the operations.

5.7 Traffic Control Measures

The Traffic Control Plan (TCP) outlines the proposed traffic management to inform road users of the changed traffic conditions in the vicinity of the works site.

Traffic control will be provided for access and egress to all gates and work zones will be in accordance with the RMS Guide to Traffic Control at Work Sites. All gates and work zones will be managed by traffic controllers at all times.

It should be noted that additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic and further mitigate possible conflicts.

In addition, it is proposed to provide three 'passing bays' on the eastern side of Rose Bay Avenue and restrict parking on a section of the western side of Rose Bay Avenue, to assist vehicles travelling along Rose Bay Avenue towards the Victoria Road/Rose Bay Avenue intersection. The bays will be placed opposite Gate 2A, Gate 2B and Gate 4 and will be accommodated by placing 'No Stopping' restrictions on the carriageway edge.

Traffic management will be provided on the approaches to each gate and work zone on Rose Bay Avenue in accordance with TCP 77 and TCP 195 and a traffic controller will be provided at each gate and work zone. (refer to Attachment 2)

A pedestrian diversion is also proposed along a section of the western footway on Rose Bay Avenue and this is further discussed in Section 5.10.

The traffic management proposals are shown in Attachment 1 and the standard TCPs are shown in Attachment 2. Full details of the specific traffic control measures and TCP's will be provided by the traffic management contractor prior to commencement of works on site,

5.8 Work Zone

As outlined above, two work zones are proposed on Rose Bay Avenue.

A 40m work zone is proposed adjacent to Gate 2 and a 25m work zone is proposed adjacent to Gate 3.

The work zone operational hours are proposed as shown below:

- Monday to Friday 7:00am to 5.30pm;
- Saturdays 7:00am to 3.30pm;
- Sunday or public holidays No works to be undertaken without prior approval

Outside these hours, the kerbside lane within the Works Zone shall be clear of all vehicles, equipment and debris.

The works zone shall be limited to vehicles no longer than an 19m Truck and Dog. All loading/unloading shall occur wholly within the Works Zone or development site. Please refer to Attachment 1 for the swept path analysis demonstrating that 19m Truck and Dog utilising the work zone are able to enter and exit without conflict with parked cars.

In order to accommodate the proposed work zone, the existing on-street signage along the property extents will need to be altered and are shown on Figure 33 and in Attachment 1.

It should be noted that additional traffic controllers will be provided at the Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school and construction traffic and further mitigate possible conflicts.

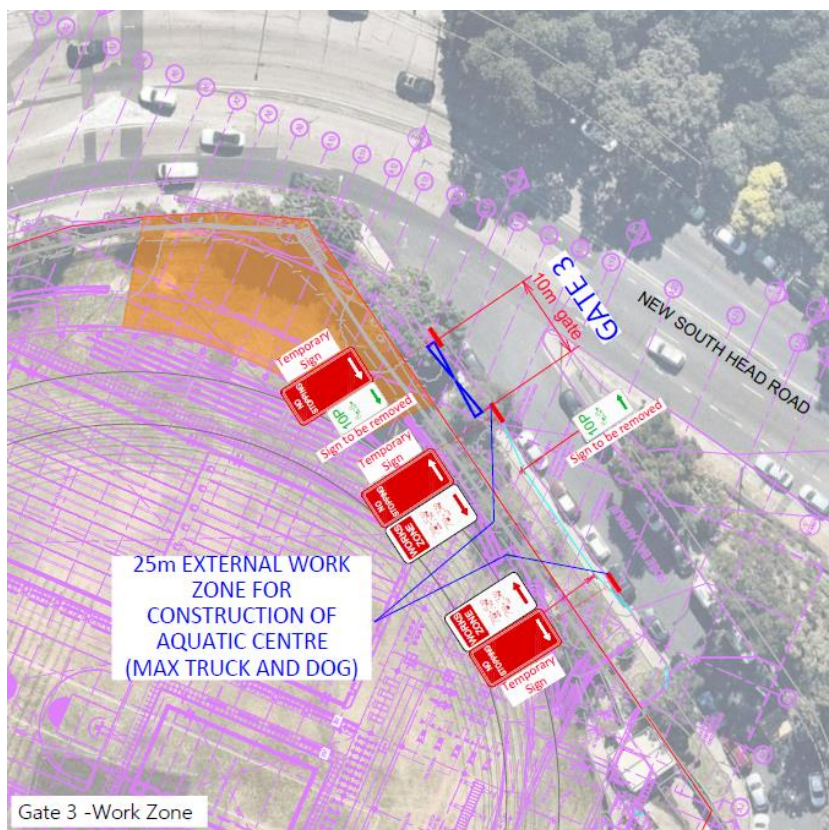
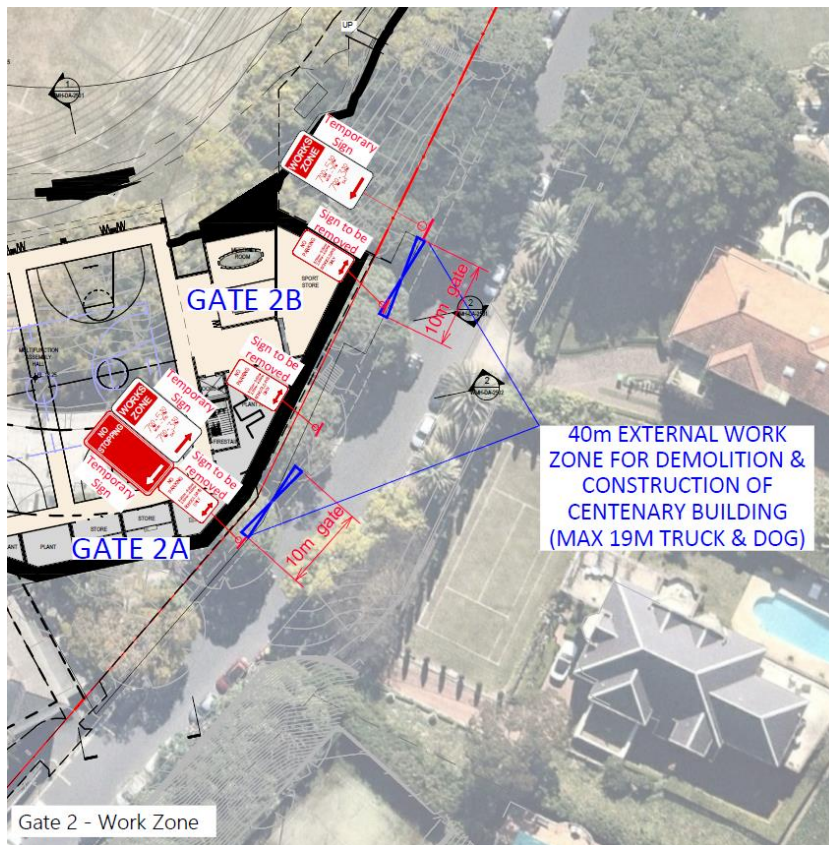


Figure 33 – Work Zones

5.9 Site Compound Area

As shown in Figure 34 and Figure 35, there are two main construction compound proposed to accommodate site accommodation, standing areas, material storage and cranes.

One area is provided for the construction of the Centenary Building and one area for the construction of the Aquatic Centre.

As outlined in Section 5.6, construction vehicles will access and egress the site in a forward direction.

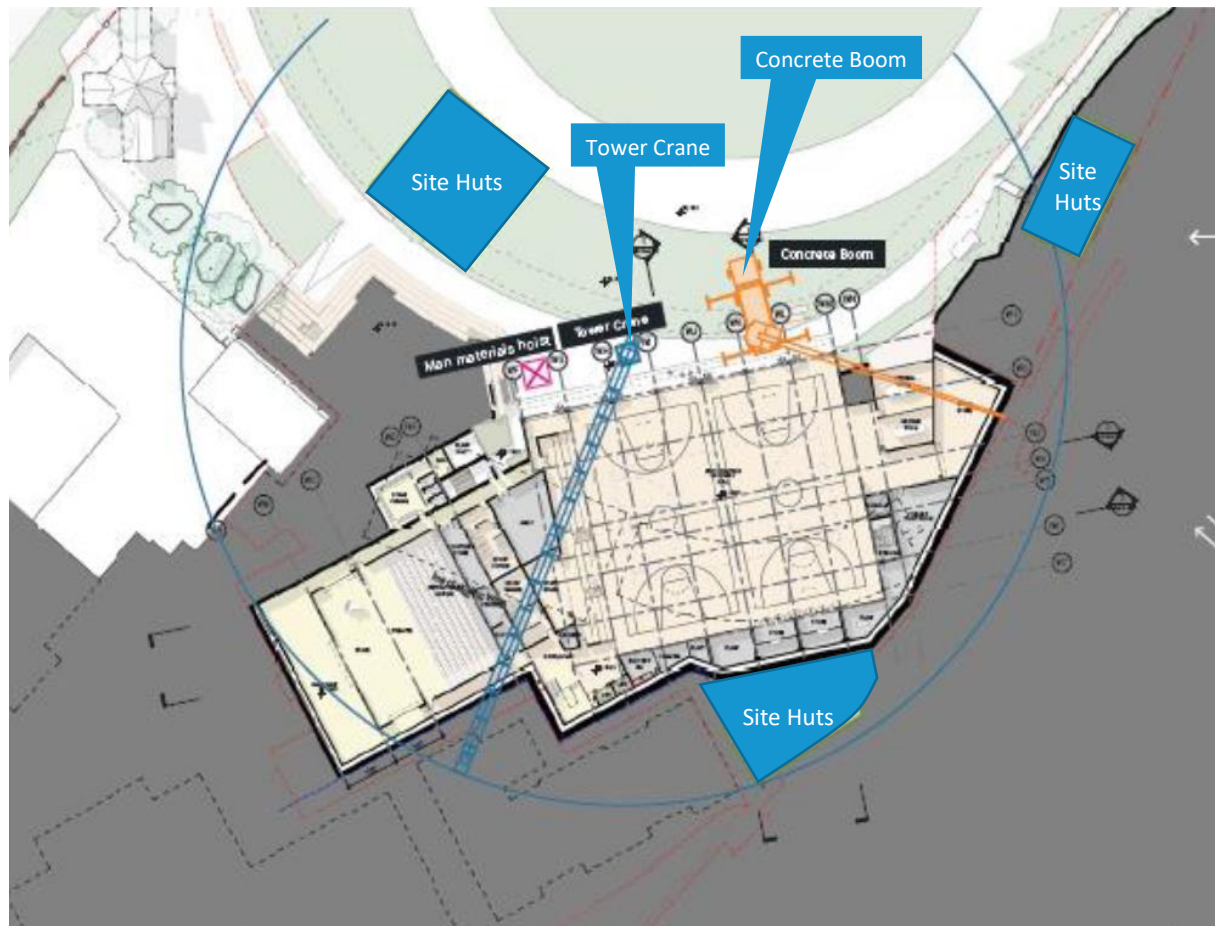


Figure 34 – Centenary Building Construction Compound

Cranbrook School, Bellevue Hill; Construction Traffic Management Plan; 14th December 2018;
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5.10 Pedestrian Access

Pedestrian access to the school and the surrounding pedestrian network is to be maintained at all times.

With the relocation of the pick up and drop facility to the internal driveway (as outlined in Section 5.6.2), pedestrian activity along the eastern section of Rose Bay Avenue is likely to be reduced. Given the construction activity in this area, it is proposed to close the footway along the site frontage from the Rose Bay Avenue Gate to the intersection of Rose Bay Avenue and New South Head Road. Pedestrians will be diverted along the eastern footway on Rose Bay Avenue during construction work times.

The extent of the pedestrian diversion is outlined in Figure 36

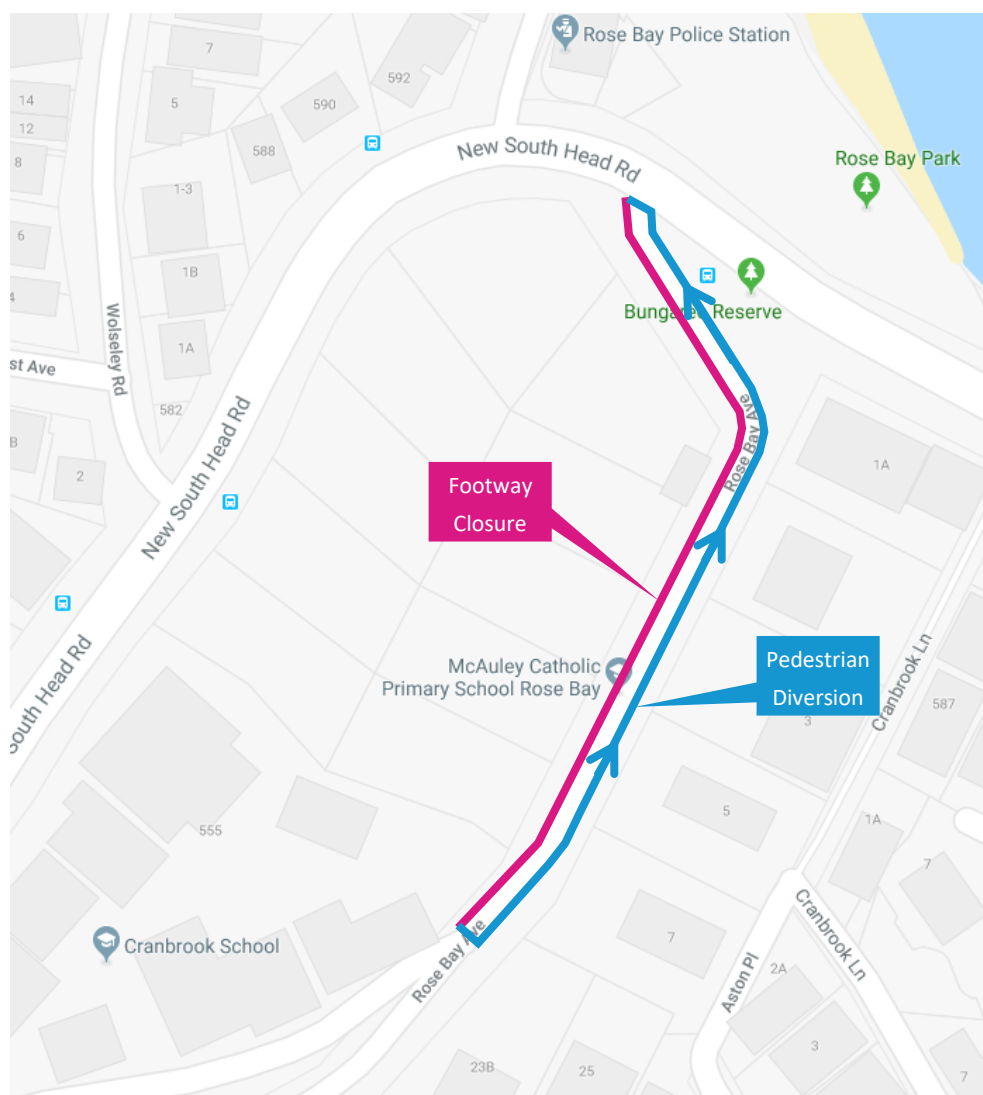


Figure 36 – Pedestrian Diversion

Pedestrian diversion signage will be provided as shown in Figure 37 and Attachment 1.

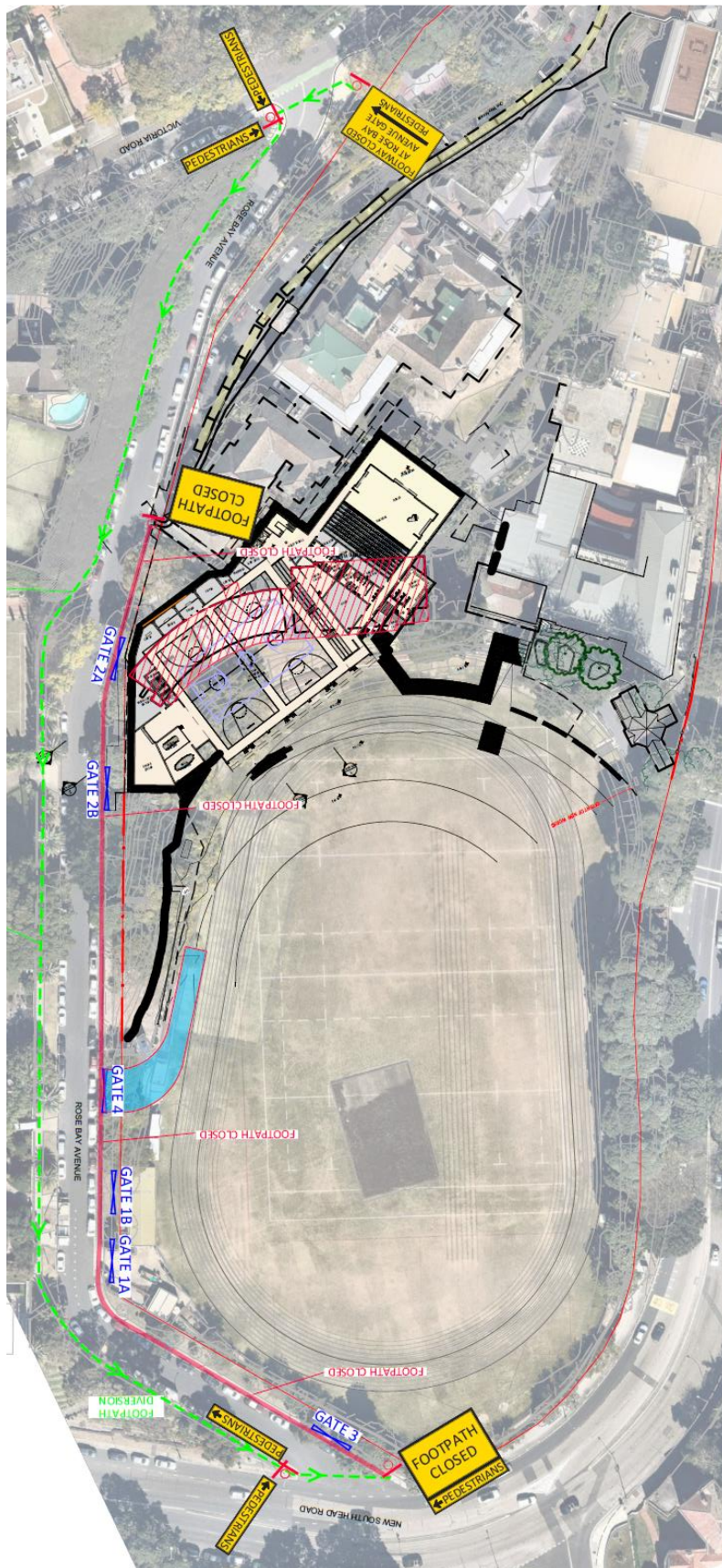


Figure 37 – Pedestrian Diversion - Sigange

5.11 Special Deliveries

Any oversized vehicle (including cranes) that are required to travel to the site will be dealt with separately, with the submission of required permits to and subsequent approval by Council prior to any delivery. Requests shall be submitted 28 days prior to the scheduled date of use of an oversized vehicle.

5.12 Staff Parking

Due to site constraint, there will be limited parking available to site personnel on site.

All site personnel are to be advised that they are not to park in the on-street parking in the vicinity of the development site. To minimise the required parking, the contractor will be encouraged to assist in the transportation of workers to the site. Also, school staff and site personnel will be advised to car pool (where ever practicable) and will be informed of the public transport options available in the vicinity of the site (refer to Section 4) and advised to utilise these facilities (where ever practicable).

The School is also looking to provide its own bus service for staff from Edgecliff station and actively enforce its policy of students not driving to school.

5.13 Work Site Security

To provide security to the works site and protection to the general public and during specific activities, Class A or B hoardings will be erected along the construction site boundary to protect the works site and the general public.

These hoardings will be erected to define the extent of the works site. All access points are to be securely locked when construction activities are not in progress.

The exact location of the fence and hoarding is to be agreed on site prior to commencement of the works and is subject to the relevant approval process by Council.

5.14 Adjacent Developments

A development is proposed for 23 Victoria Road, Bellvue Hill and the location of this development in relation to the school is shown in Figure 38.

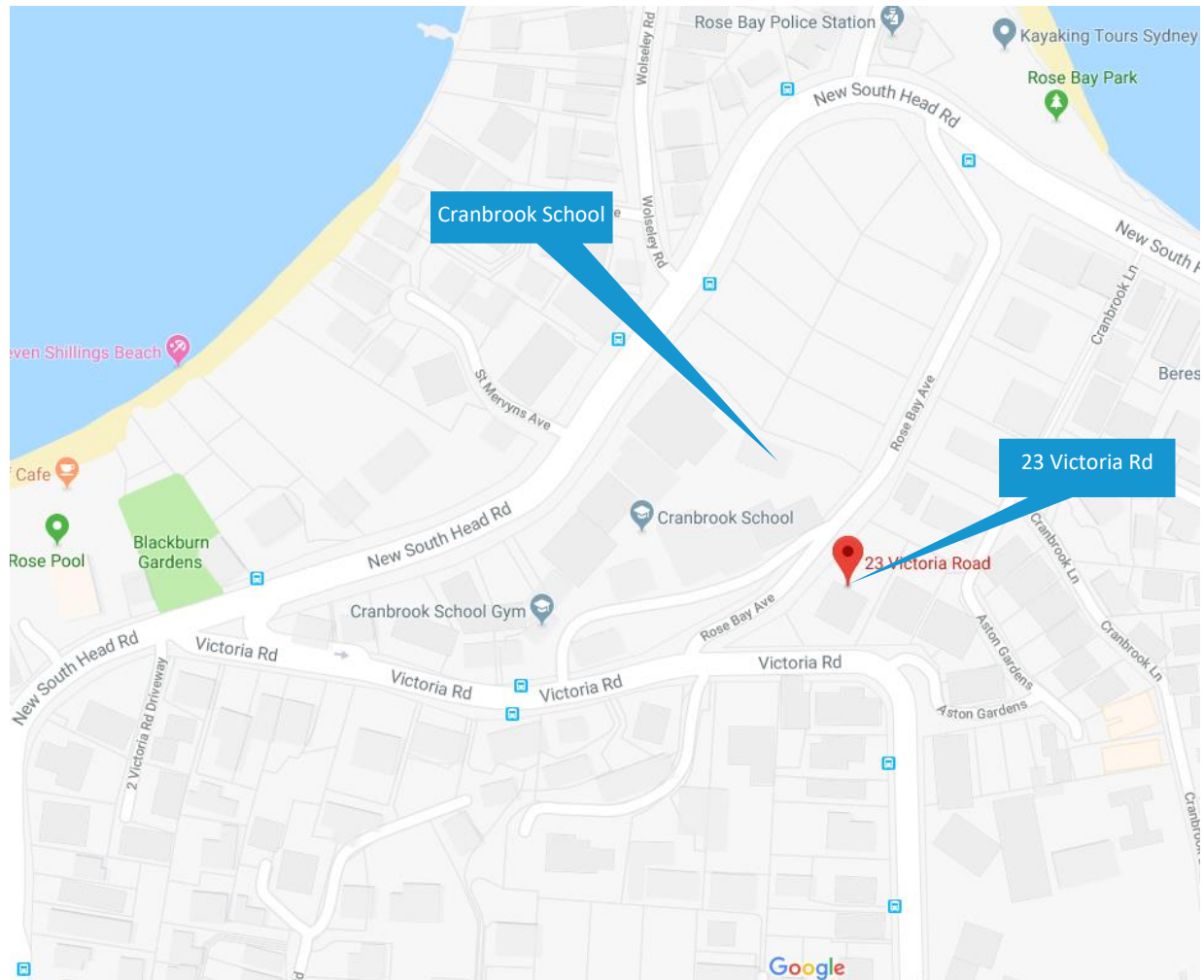


Figure 38 – Adjacent Developments

At this stage the program for the redevelopment of the School and the development of 23 Victoria Road are unknown. When the programs of both developments are finalised, the Principle Contractor will liaise with the adjacent development, on a fortnightly basis, to co-ordinate the traffic management to minimise the cumulative traffic and parking impacts of both developments.

5.15 Staff Induction

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. Additionally, the Principle Contractor will discuss TMP requirements regularly as a part of toolbox talks and advise workers of public transport and car-pooling opportunities.

5.16 Emergency Vehicles

The proposed traffic control arrangements do not propose closure of any local roads. Any emergency vehicles requiring access to the project site will do so via the relevant site access along Rose Bay Avenue.

5.17 Occupational Health and Safety

Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold RMS accreditation in accordance with Section 8 of Traffic Control at Worksites.

5.18 Method of Communicating Traffic Changes

Traffic control plans in accordance with Australian Standards (AS 1742.3 – Traffic Control Devices for Works on Roads) and RMS Traffic Control at Worksites manual will advise motorists of upcoming changes in the road network.

During construction the contractor shall, prior to work commencing, ensure all signage is erected in accordance with the TCP and clearly visible. Each evening, upon completion of work, the contractor is to ensure signage is either covered or removed as required. Sign size is to be size “A”.

No deviation from the approved TCP shall be permitted, unless otherwise approved by the Department and certified by an RMS accredited personnel.

The associated TCP road signage will inform drivers of works activities in the area including truck movements in operation.

Prior to commencement of works on site the contractor is to inform neighbouring properties of proposed works and provide site contact information by means of a letter box distribution.

5.19 Contact Details for On-Site Enquiries and Site Access

Details of the contact for the Principle Contractor will be provided once the Principle Contractor has been appointed.

Alternatively contact can be made with, David Hull, Cranbrook Head of Facilities Management on 0411 853 798.

5.20 Maintenance of Roads and Footways

The roads and footpaths along the route of travel will be kept in a serviceable state at all times. A dilapidation study will be prepared and submitted to the Council and any damage arising as a result of the proposed truck movements will be treated / repaired by the principal contractor at no cost to Council or the School.

6. Woollahra Construction Traffic Management Plan Conditions

Woollahra Council's proposed condition D.9 Construction Management Plan is set out below and the relevant CTMP items addressing each condition are outlined in Table 7

'As a result of the site constraints, limited space and access, a Construction Management Plan (CMP) is to be submitted to Council. Also, due to the lack of on-street parking, a work zone may be required during construction.

The principle contractor or owner must submit an application for approval of the Construction Management Plan by Council's Traffic Engineer and pay all fees associated with the application. The plan must be submitted as a self-contained document that outlines the nature of the construction project and as applicable, include following information.'

Table 7 – Woollahra Construction Management Plan Conditions

Item	Condition	Response to condition
a	<i>Detail the scope of the works to be completed including the various stages, EG: Demolition, excavation, construction etc and the duration of each stage</i>	Refer to Section 5.6
b	<i>Identify local traffic routes to be used by construction vehicles</i>	Refer to Section 5.5
c	<i>Identify ways to manage construction works to address impacts on local traffic routes</i>	Refer to Section 5.6
d	<i>Identify other developments that may be occurring in the area and identify ways to minimise the cumulative traffic impact of these developments. Should other developments be occurring in close proximity to the subject site, the developer / builder is to liaise fortnightly with the other developer / builders undertaking work in the area in order to minimise the cumulative traffic and parking impacts of the developments</i>	Refer to Section 5.14
e	<i>Detail how construction workers will travel to and from the site and parking arrangements for those who drive</i>	Refer to Section 5.12
f	<i>Identify any proposed road closures, temporary traffic routes, loss of pedestrian or cyclist access or reversing manoeuvres onto a public road and provide traffic Control Plans (TCPs) prepared by an accredited RMS Red or Orange card holder to manage those temporary changes</i>	Refer to Sections 5.6 and 5.7

<i>g</i>	<i>Detail the size (including dimensions), numbers and frequency of arrival of the construction vehicles that will service the site for each stage of works</i>	Refer to Section 5.4
<i>h</i>	<i>Provide for the standing of vehicles during construction</i>	Refer to Sections 5.6 and 5.9
<i>i</i>	<i>If construction vehicles are to be accommodated on the site, provide a scaled drawing showing where these vehicles will stand and the vehicle swept path to show that these vehicles can access and egress the site in a forward direction (including dimensions and all adjacent traffic control devices, such as parking restrictions, pedestrian facilities, kerb extensions, etc)</i>	Refer to Sections 5.6 and 5.9
<i>j</i>	<i>If trucks are to be accommodated on Council property, provide a scaled drawing showing the location of any proposed Work Zone (including dimensions and all adjacent traffic control devices, such as parking restrictions, pedestrian facilities, kerb extensions, etc)</i>	Refer to Section 5.8
<i>k</i>	<i>Show the location of any site sheds and any anticipated use of cranes and concrete pumps and identify the relevant permits that will be required</i>	Refer to Section 5.9
<i>l</i>	<i>If a crane/s are to be accommodated on site, detail how the cranes/s will be erected, removed, including the number and size of vehicles involved in the removal of the crane/s, duration of the operation and the proposed day and times, any full or partial road closures required to erect or remove the crane/s and appropriate Traffic Control Plan (TCP) prepared by an approved RMS Red or Orange Card holder</i>	Details of cranes, location, type and access / egress arrangements are outlined in the Construction Management Plan and any required access / egress arrangements will be subject to a separate application as outlined in Section 5.11 .
<i>m</i>	<i>Make provision for all materials, plant, etc. to be stored within the development site at all times during construction</i>	Details of the site compound areas are outlined in Section 5.9 and further details are provided in the Construction Management Plan
<i>n</i>	<i>State that any oversized vehicles proposed to operate on Council property (including Council approved Work Zones) will attain a Permit to Stand Plant on each occasion (Note: Oversized vehicles are vehicles longer than 7.5m or heavier than 4.5T)</i>	All oversized vehicles will attain a Permit to Stand Plant on each occasion
<i>o</i>	<i>Show location of any proposed excavation and estimated volumes</i>	Location of any excavations and volumes are provided as in the Construction Management Plan.

p	When demolition, excavation and construction works are to be undertaken on school days, all vehicular movements associated with this work shall be undertaken between the hours of 9.30am and 2.30pm, in order to minimise disruption to the traffic network during school pick up and drop off times	As outlined in Section 5.6. It should be noted that Cranbrook wish to operate under unrestricted vehicular movement time frames and carefully manage pedestrian and traffic safety by having additional traffic controllers at Victoria Road and Rose Bay Avenue Gates, during school zone times, to manage the interface between the school, the general public and construction traffic and further mitigate possible conflicts.
q	Show the location of all Tree Protection (Exclusion) zones (Note: storage of building materials or access through Reserve will not be permitted without prior approval by Council)	Location of any Tree Protection (Exclusion) zones are provided in the Construction Management Plan

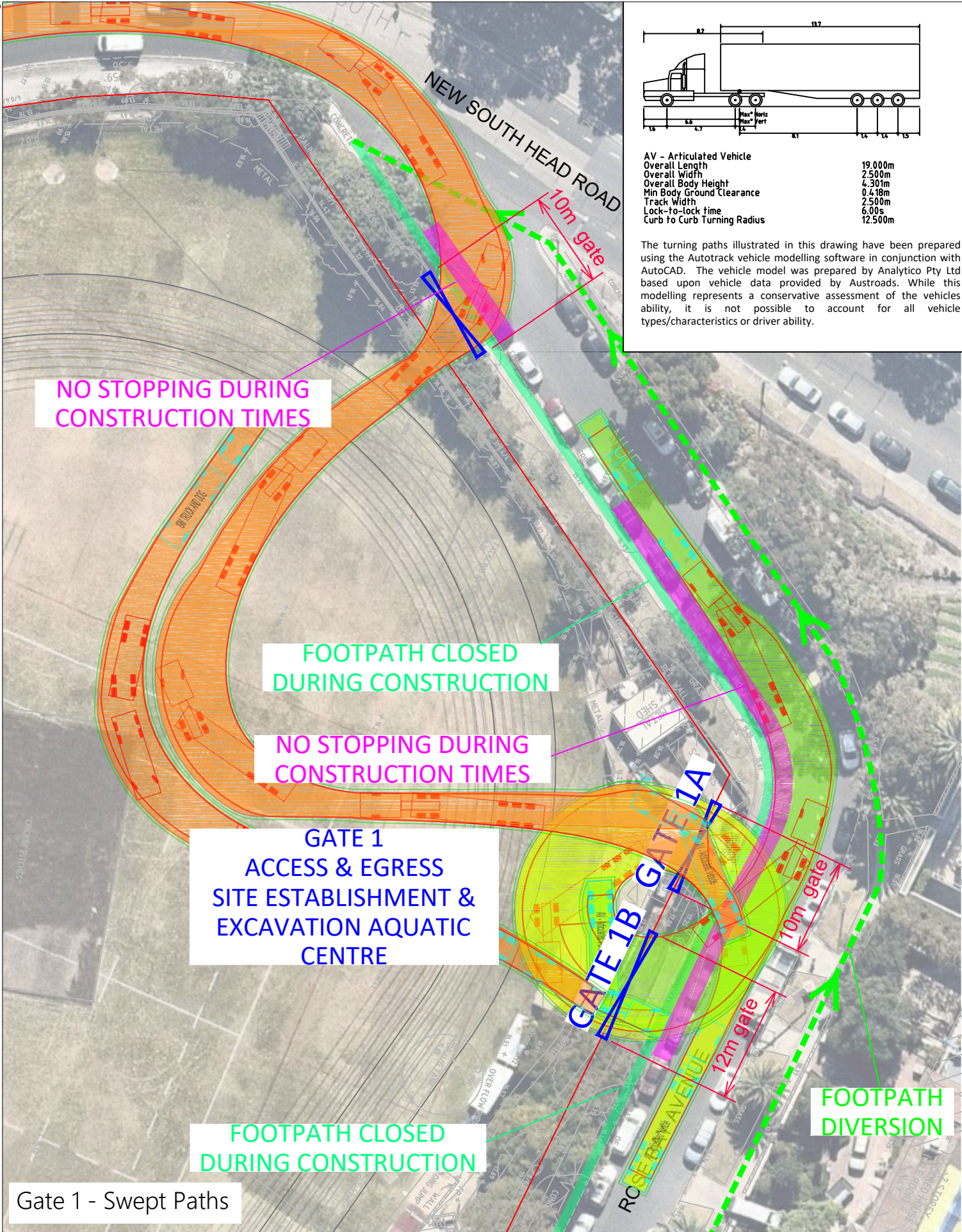
7. Conclusion

This CTMP has been prepared to outline the construction traffic measures to improve site safety to the public, students, staff and workers and the construction process.

With the measures described in the CTMP in place, the construction activity is anticipated to have minimal disruption to the daily activities within the vicinity of the site.

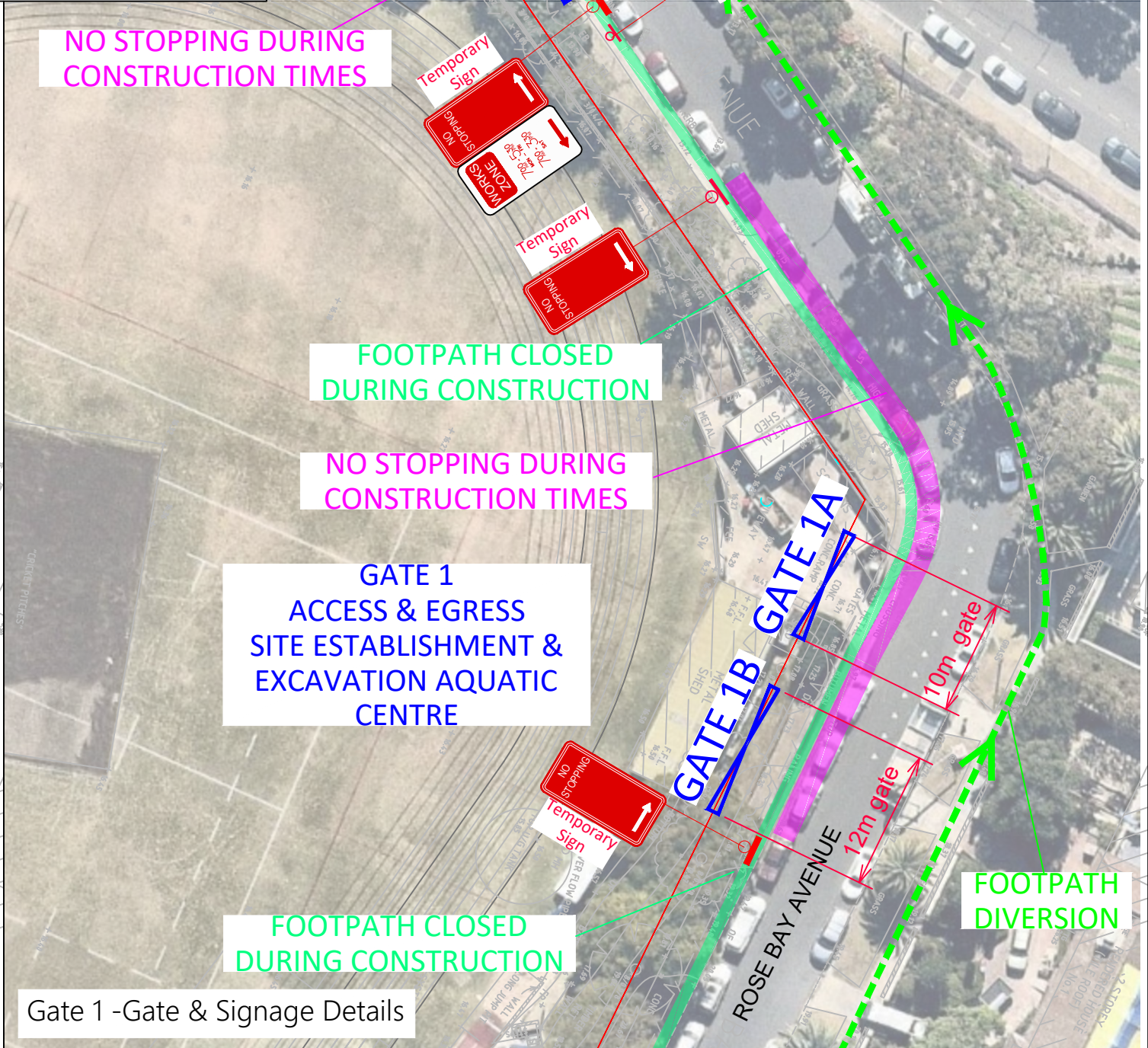
It is envisaged that this document will be continually reviewed to ensure compliance with RMS, Councils and any other authorities requirements and that the procedures in place are mitigating traffic and providing safe conditions for all users.

Attachment 1 Concept Traffic Management Plan



Gate 1 - Swept Paths

- GENERAL NOTES:**
1. All dimensions in metres unless stated otherwise.
 2. All pavement markings and signage to be in accordance with RMS Guide to delineation, AS1742 and AS1743.
 3. All road signs to be size A unless stated otherwise.
 4. Exact location of signs to be agreed with on site, prior to installation.
 5. Exact location of gates to be agreed on site prior to installation



Gate 1 -Gate & Signage Details

COMMENTS

A3

ptc.

Suite 102, 506 Miller Street, Cammeray NSW 2062
t +61 2 8920 0800
ptcconsultants.co

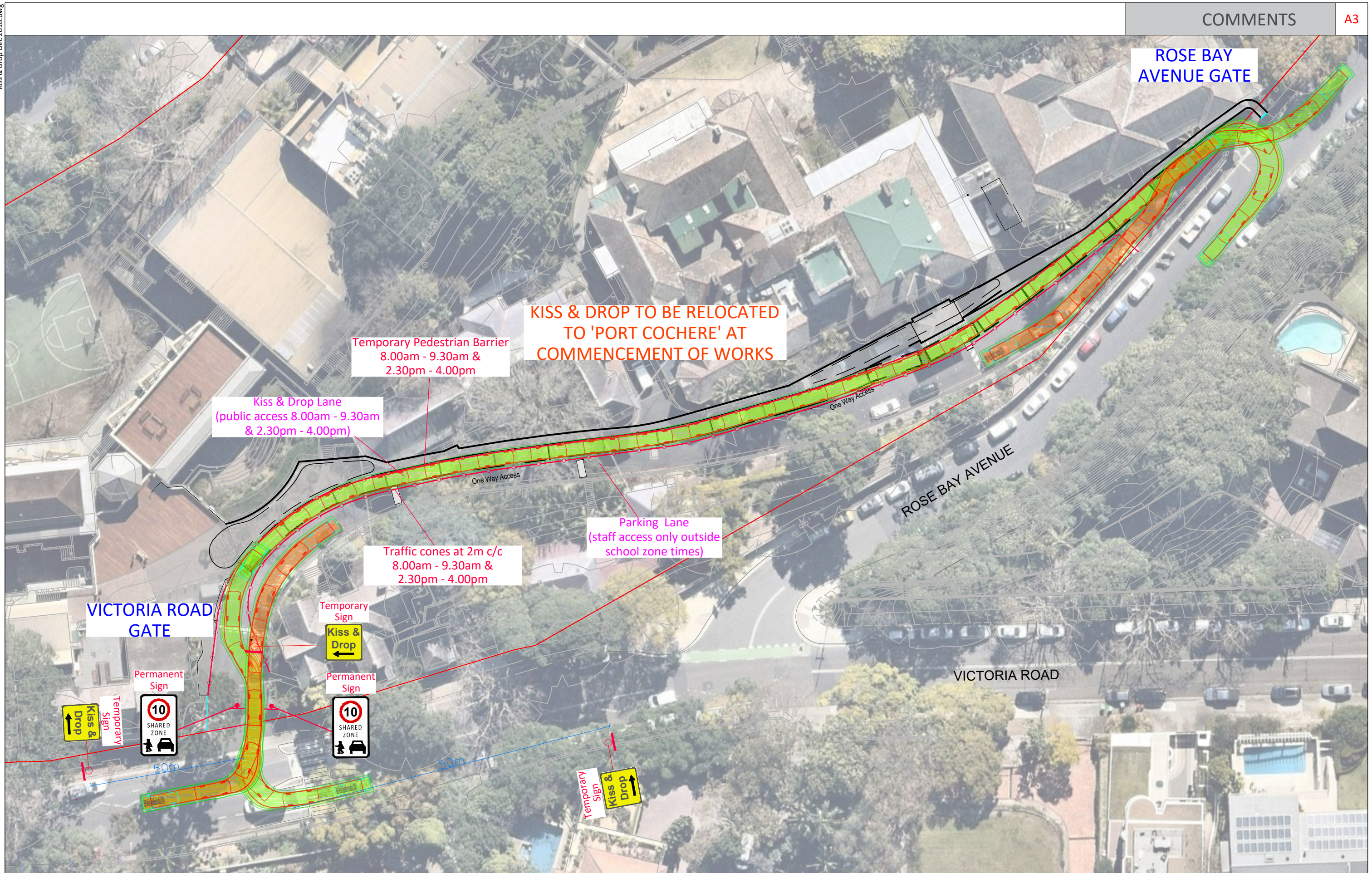
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1	27/11/18	Preliminary Traffic Management	SW	AM					

PROJECT:
Cranbrook Senior School

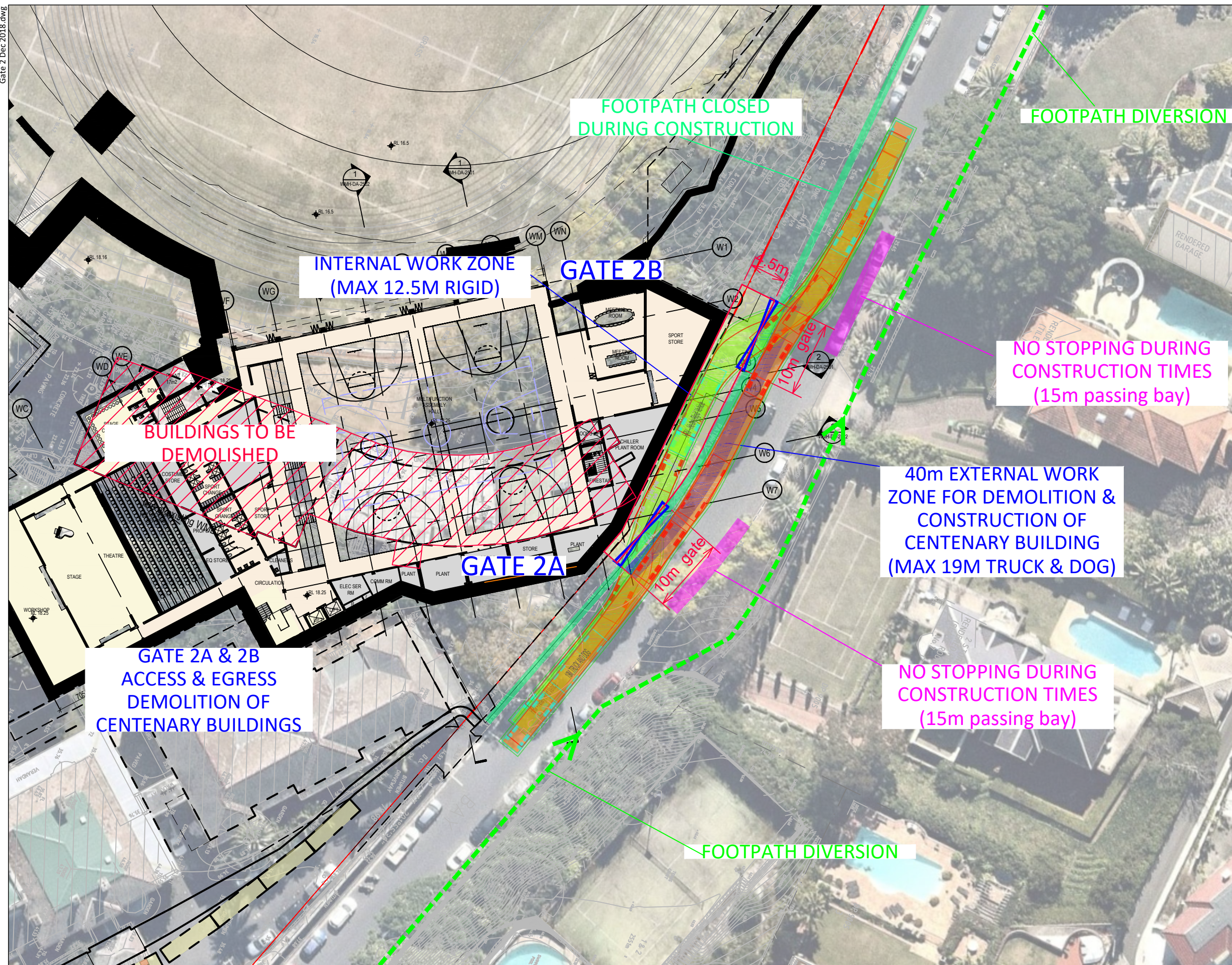
DRAWING TITLE:
Traffic Management
Gate 1

CLIENT: Cranbrook School
DRG. #: CTMP-001
PROJECT #: 2288C
SCALE: 1:500

REV: 2



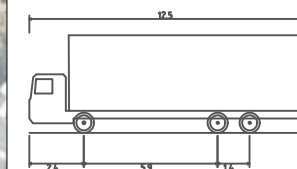
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1	28/11/18	Preliminary Traffic Management	SW	AM					



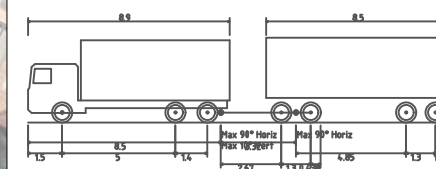
COMMENTS

A3

DESIGN VEHICLES



HRV - Heavy Rigid Vehicle	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



19M TRUCK AND DOG	
Overall Length	19,000m
Overall Width	2,600m
Overall Body Height	3,738m
Min Body Ground Clearance	0,427m
Track Width	2,500m
Lock-to-lock time	4,00s
Wall to Wall Turning Radius	12,000m

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

GENERAL NOTES:

- GENERAL NOTES:**
1. All dimensions in metres unless stated otherwise.
 2. All pavement markings and signage to be in accordance with RMS Guide to delineation, AS1742 and AS1743.
 3. All road signs to be size A unless stated otherwise.
 4. Exact location of signs to be agreed with on site, prior to installation.
 5. Exact location of gates to be agreed on site prior to installation

ptc.

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2062

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
2	12/12/18	Traffic Management	SW	AM					
1	27/11/18	Preliminary Traffic Management	SW	AM					

PROJECT:
Cranbrook Senior School

DRAWING TITLE:

Traffic Management
Gate 2 - General Arrangements

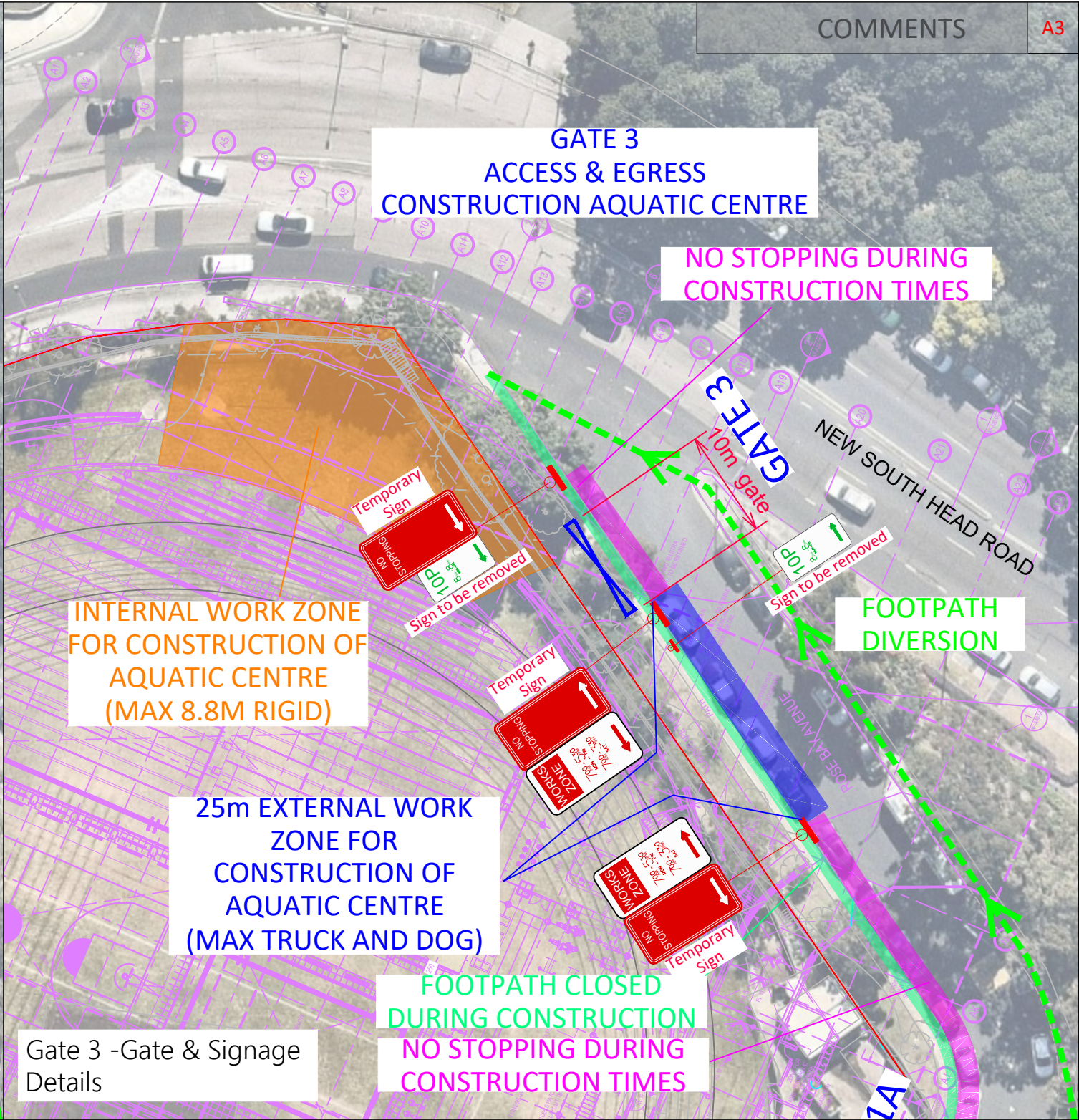
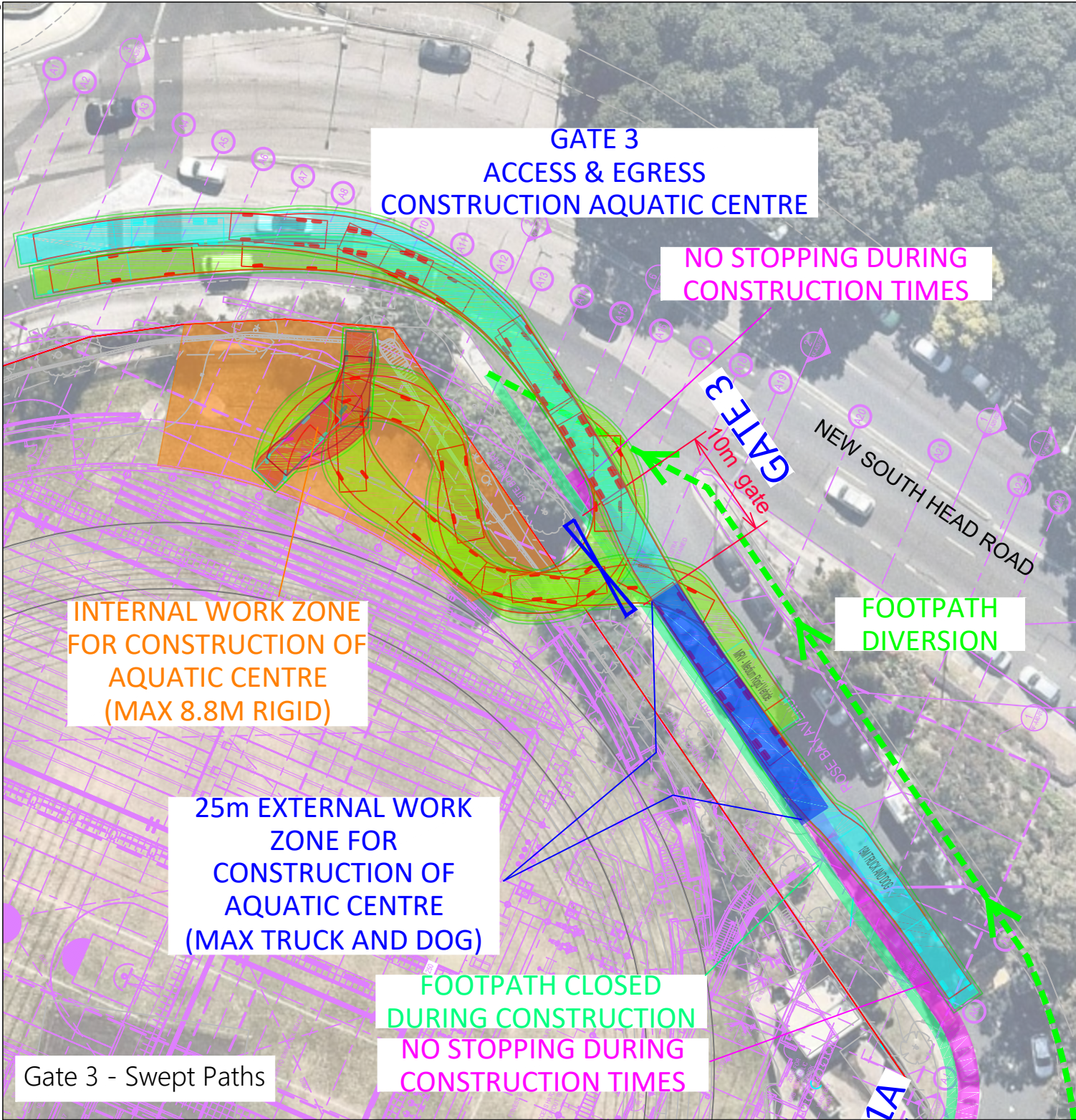
CLIENT:	Cranbrook School
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DRG. #: CTMP-003

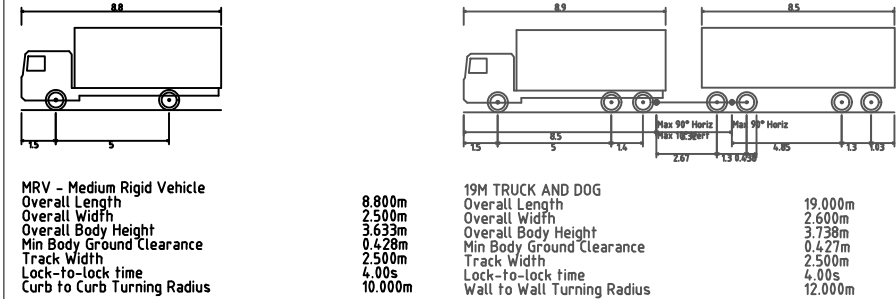
PROJECT #: 2288C

SCALE: 1:500

REV: 2



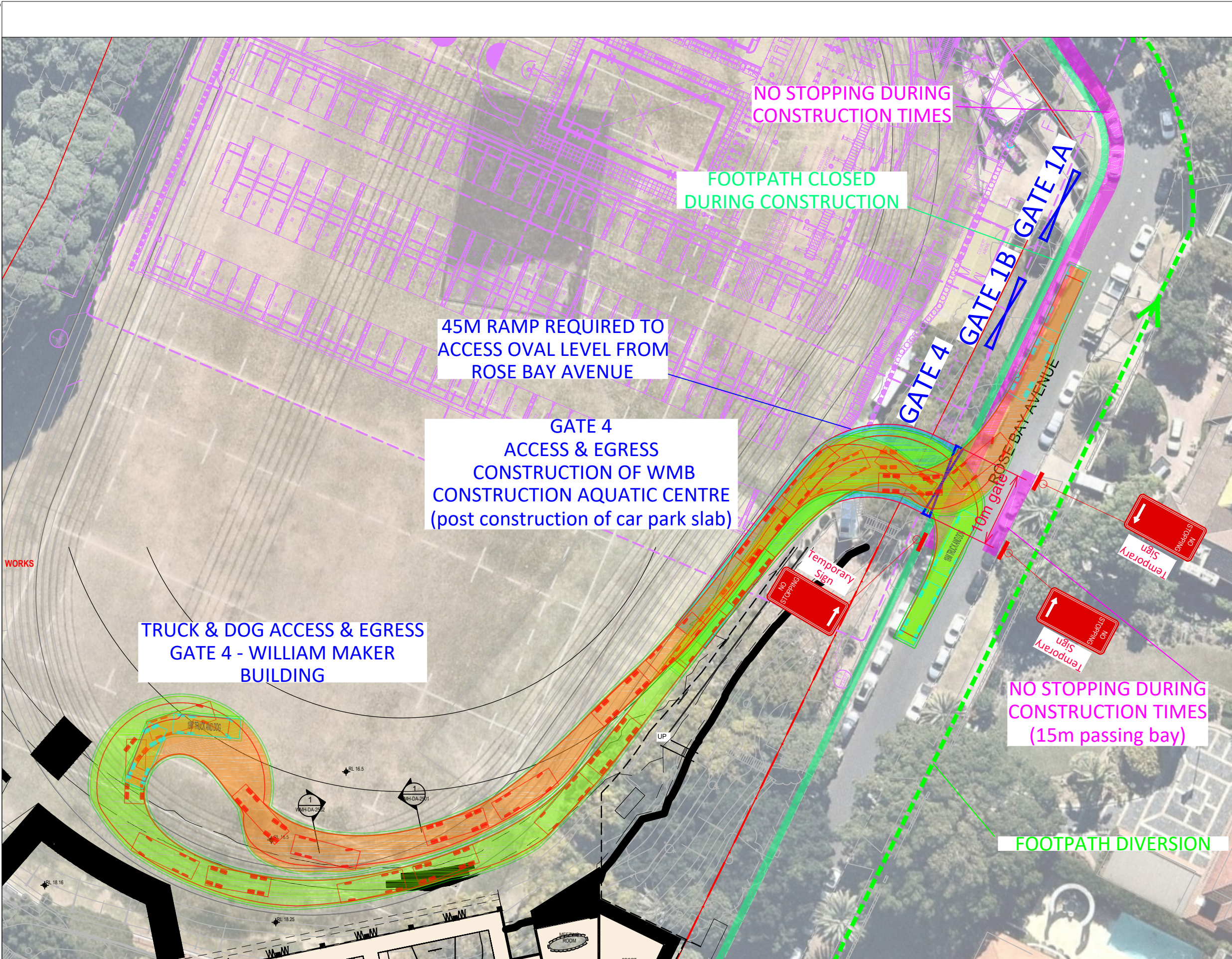
DESIGN VEHICLES



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

- GENERAL NOTES:
1. All dimensions in metres unless stated otherwise.
 2. All pavement markings and signage to be in accordance with RMS Guide to delineation, AS1742 and AS1743.
 3. All road signs to be size A unless stated otherwise.
 4. Exact location of signs to be agreed with on site, prior to installation.
 5. Exact location of gates to be agreed on site prior to installation

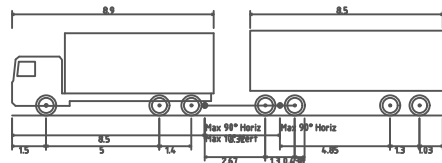
ptc. Suite 102, 506 Miller Street, Cammeray NSW 2062 t +61 2 8920 0800 ptcconsultants.co	REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED		PROJECT: Cranbrook Senior School	DRAWING TITLE: Traffic Management Gate 3	CLIENT:	Cranbrook School	
														DRG. #:	CTMP-005	REV: 2
														PROJECT #:	2288C	
														SCALE:	1:500	
	2	12/12/18	Traffic Management	SW	AM											
	1	30/11/18	Preliminary Traffic Management	SW	AM											



COMMENTS

A3

DESIGN VEHICLES



19M TRUCK AND DOG
Overall Length 19.000m
Overall Width 2.600m
Overall Height 3.738m
Min Body Ground Clearance 0.427m
Track Width 2.500m
Lock-to-lock time 4.00s
Wall to Wall Turning Radius 12.000m

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

GENERAL NOTES:

1. All dimensions in metres unless stated otherwise.
2. All pavement markings and signage to be in accordance with RMS Guide to delineation, AS1742 and AS1743.
3. All road signs to be size A unless stated otherwise.
4. Exact location of signs to be agreed with on site, prior to installation.
5. Exact location of gates to be agreed on site prior to installation

ptc.

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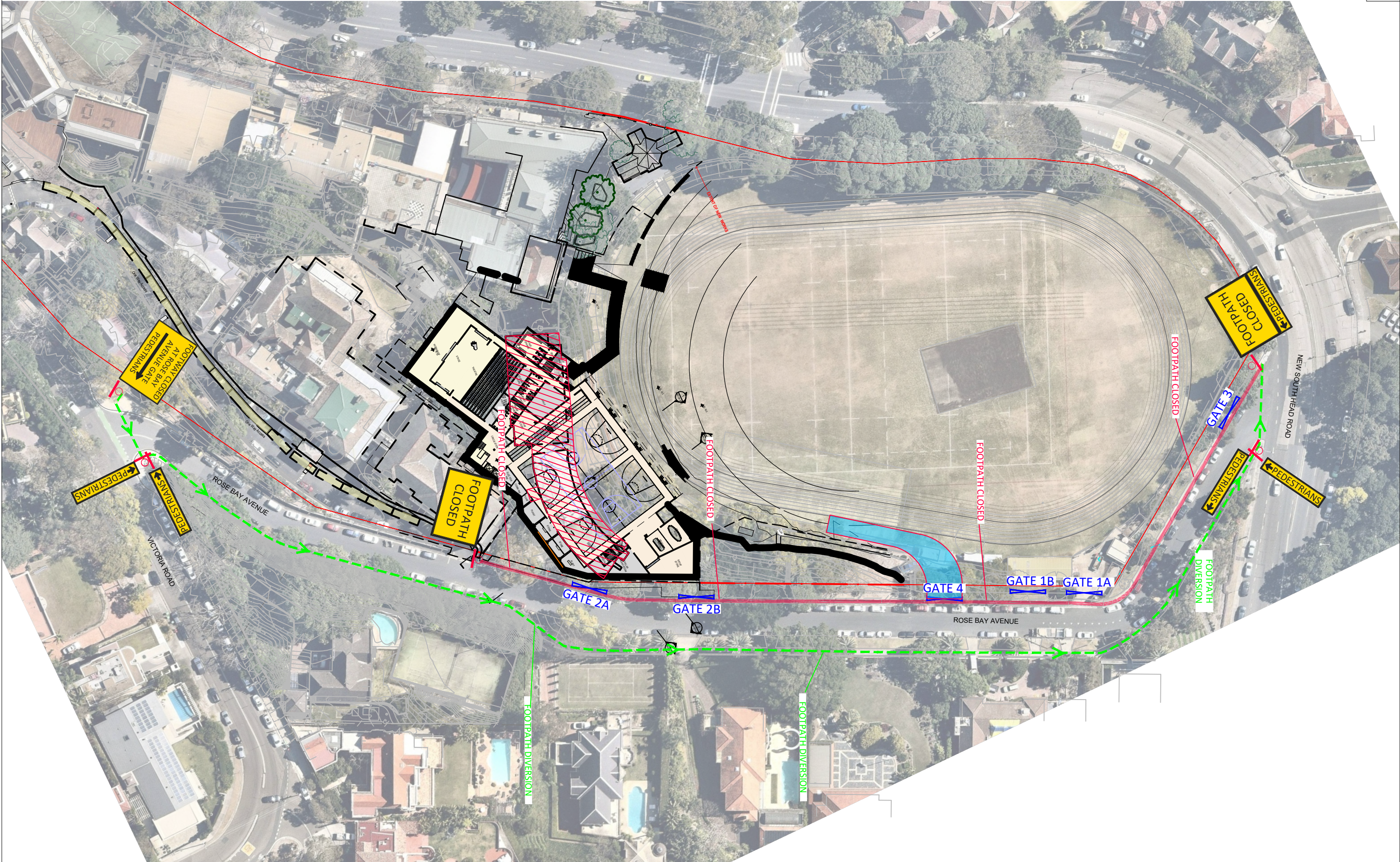
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2	12/12/18	Traffic Management	SW	AM					
1	27/11/18	Preliminary Traffic Management	SW	AM					

PROJECT:
Cranbrook Senior School

DRAWING TITLE:
Traffic Management
Gate 4

CLIENT: Cranbrook School
DRG. #: CTMP-006
PROJECT #: 2288C
SCALE: 1:500

REV: 2





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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
2	12/12/18	Traffic Management	SW	AM					
1	30/11/18	Preliminary Traffic Management	SW	AM					

PROJECT:
Cranbrook Senior School

DRAWING TITLE:
Traffic Management
Footpath Diversion

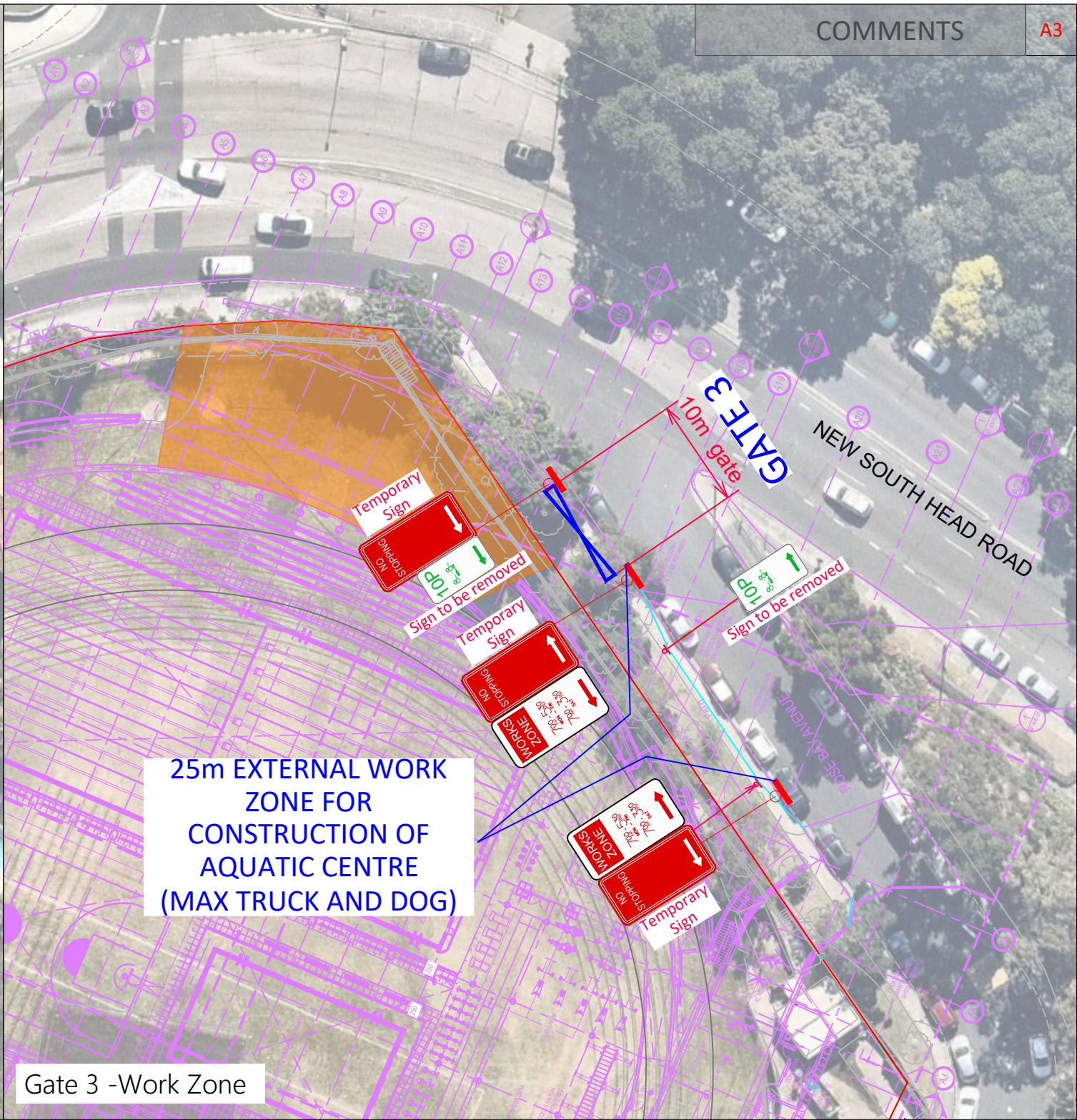
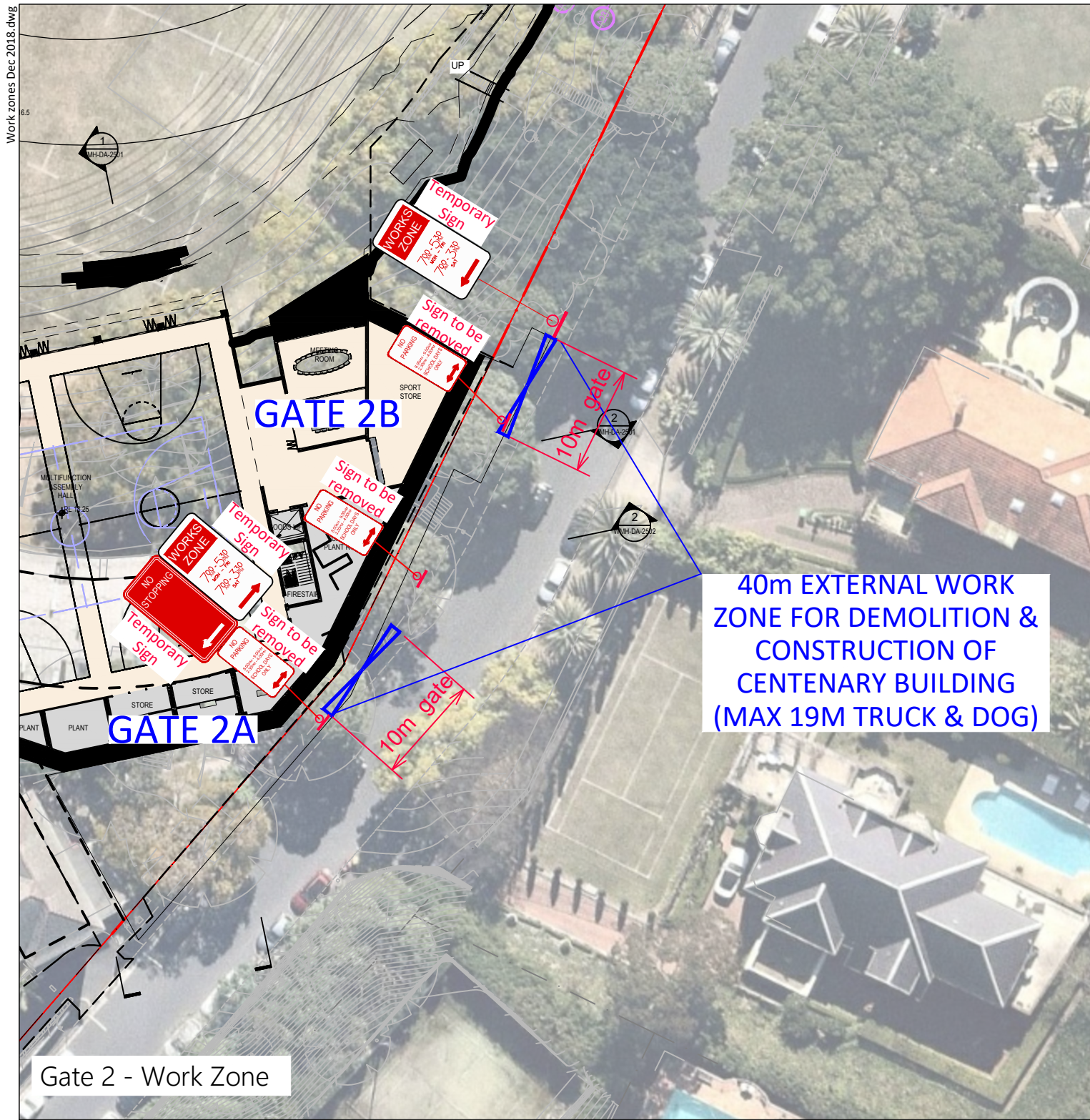
CLIENT: Cranbrook School

DRG. #: CTMP-007

PROJECT #: T2-2288

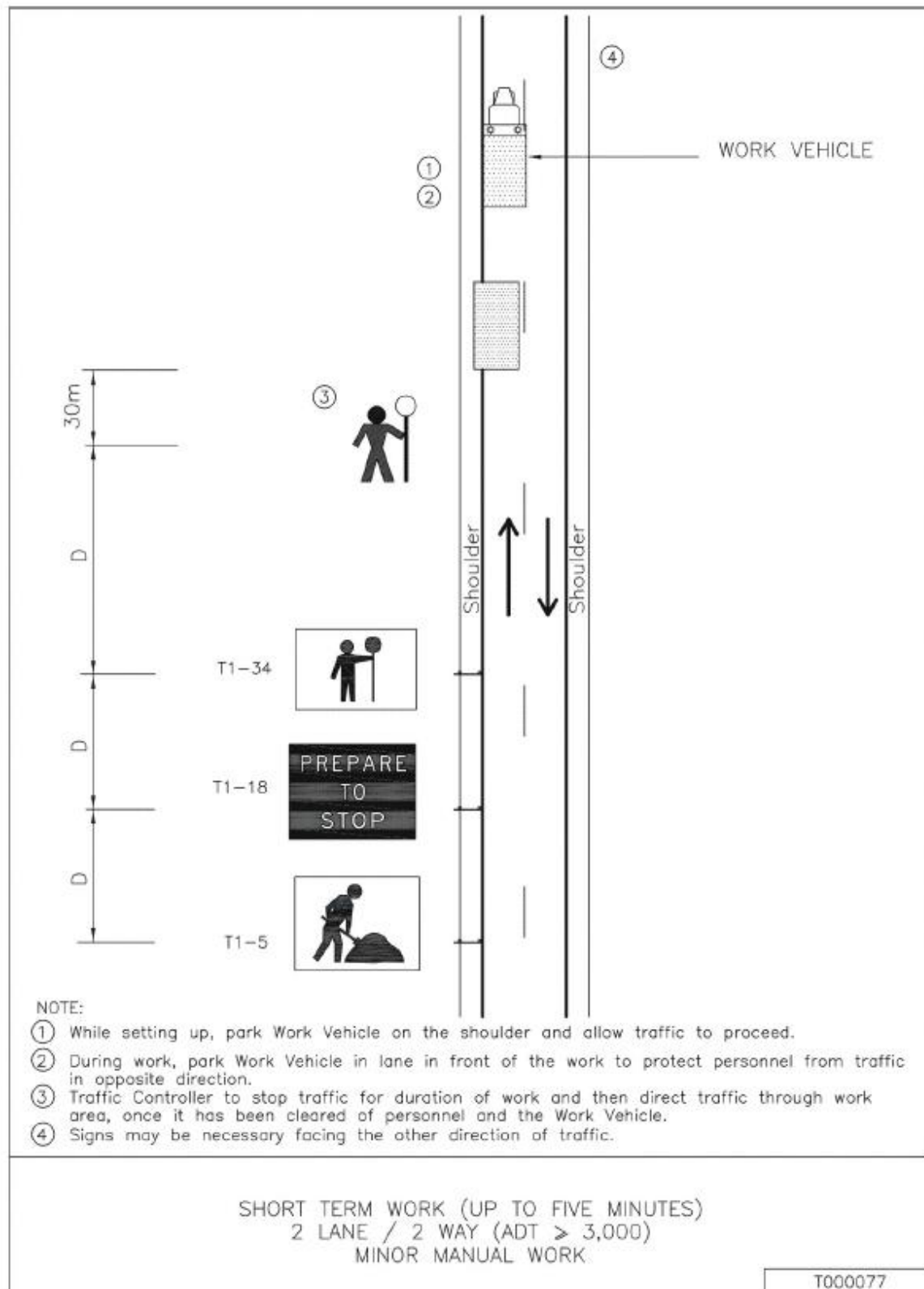
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REV: 2

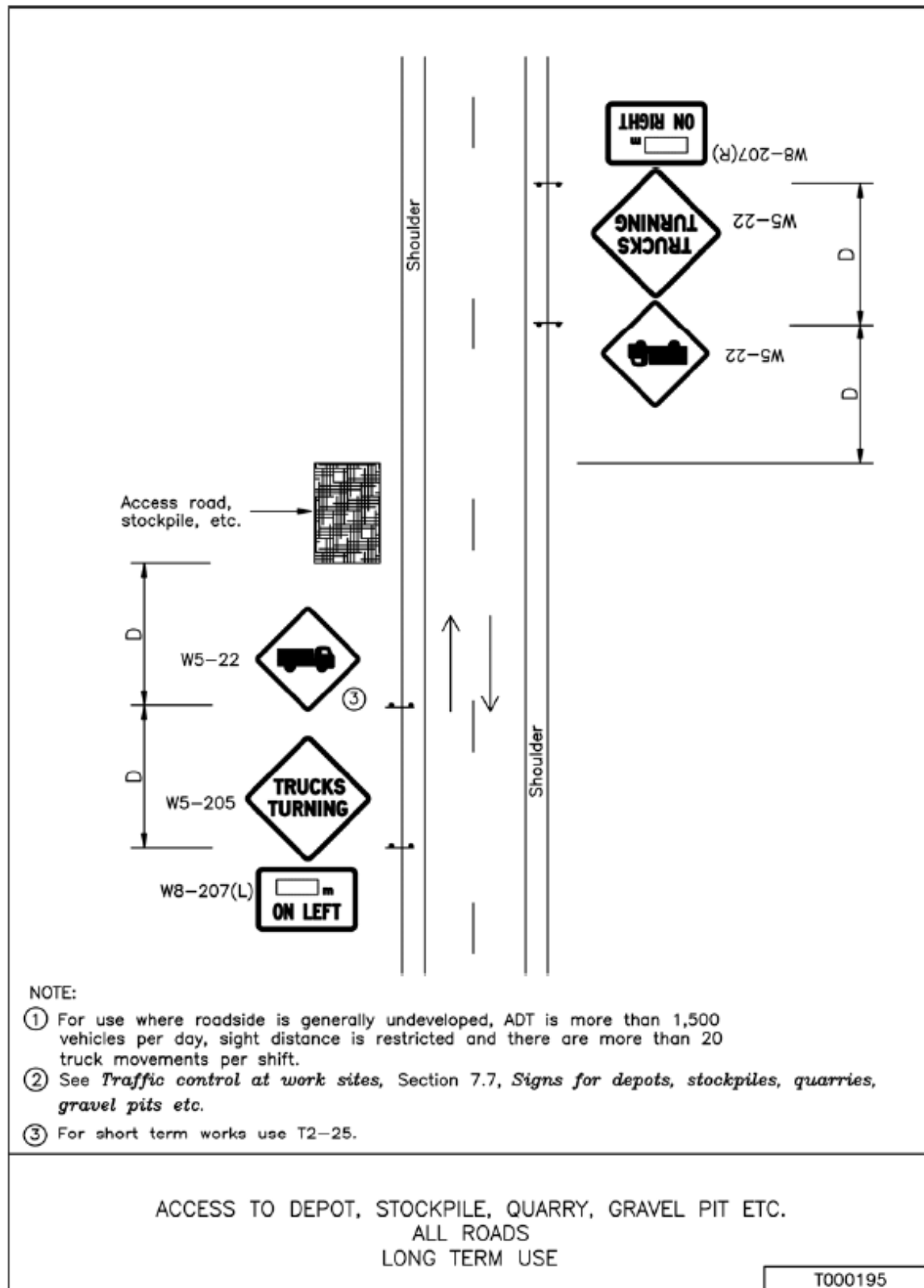


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Attachment 2 Traffic Control Plans



TCP 77



TCP 195