NSW GOVERNMENT | Planning & Infrastructure

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Our ref.: MP 10_0149 & MP10_0150(Project Number)

Mr Dennis Zines
Project Director
WSP Fitzwalter
Level 1, 41 McLaren Street
North Sydney NSW 2060

Dear Mr Zines

Subject: Exhibition of Graythwaite Concept Plan (MP 10_0149) and Stage 1 Project Application (MP 10_0150)

The exhibition of the Environmental Assessment for the above project ended on Friday 9 December 2011. All submissions received by the Department during the exhibition of the project are available on the Department's website at the following location:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4274

In accordance with section 75H of the *Environmental Planning and Assessment Act 1979*, the Director-General requires Shore School to respond to the issues raised in these submissions in a Submissions Report.

If there are any proposed changes to the project to minimise its environmental impact, a Preferred Project Report may be required. The Statement of Commitments may need to be revised to reflect any proposed changes to the project.

The department notes that a new pick-up and drop-off facility forms part of the concept plan, and a range of conceptual options have been provided within the Transport and Accessibility Impact Assessment. Notwithstanding that the proposed facility will be the subject of a future development application, the department considers that a "preferred option" needs to be established in the concept plan, in consultation with North Sydney Council. The department requests that any response to submissions report or preferred project report be accompanied by a preferred pick-up and drop-off facility option, in sufficient detail that it can be assessed as part of the concept plan determination.

Your contact officer for this proposal, Ben Eveleigh, can be contacted on (02) 9228 6391 or via email at ben.eveleigh@planning.nsw.gov.au. Please mark all correspondence regarding the proposal to the attention of the contact officer.

Yours sincerely,

Heather Warton
Director
Metropolitan and Regional Projects North

20/12/11

Graythwaite, North Sydney

Part 3A Concept Application and Stage 1 Project Application

Preferred Project Report - Transport Aspects

7 March 2012

Prepared for

Sydney Church of England Grammar School (Shore)

Halcrow

Graythwaite, North Sydney
Revised EA Project Report - Transport Aspects

Prepared for
Sydney Church of England Grammar School (Shore)

This report has been issued and amended as follows:

Rev	Description	Date	Approved by
V01	Client Issue	27/02/2012	JR
V02	Final for Submission	6/03/2012	JR

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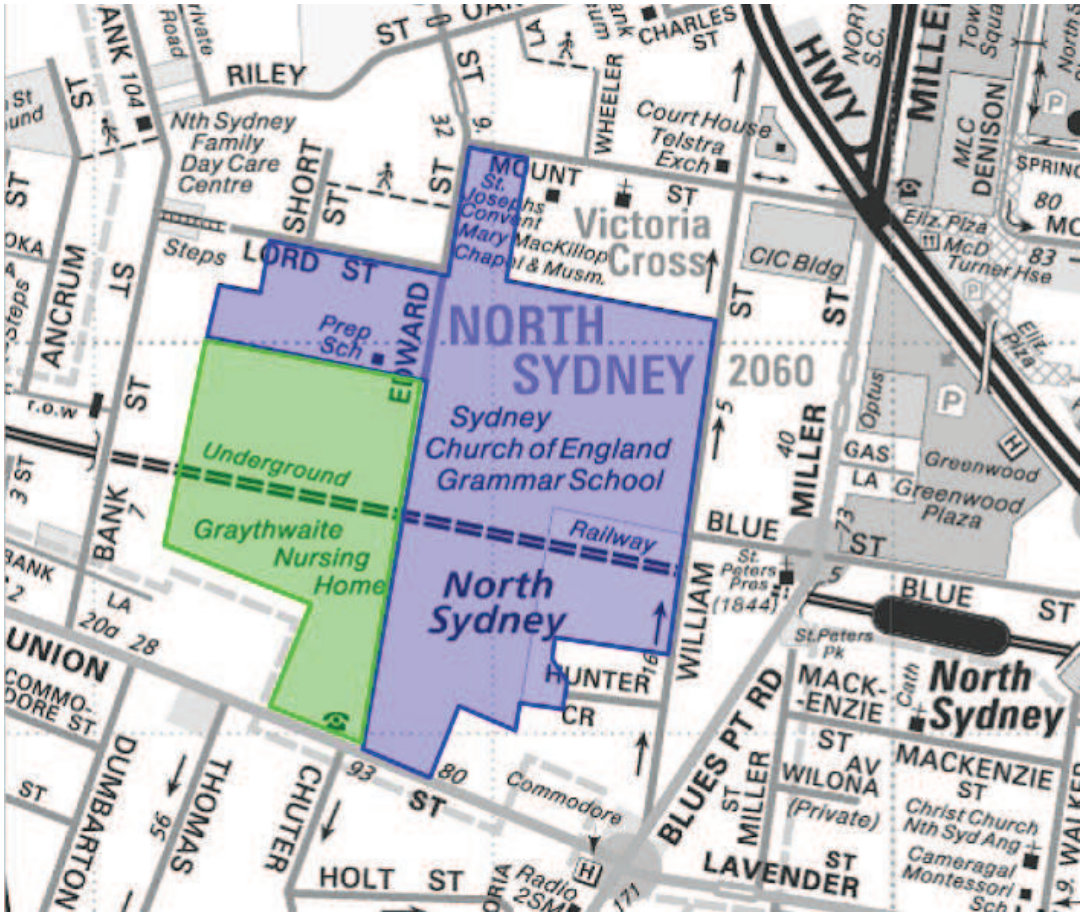
Contents

1 Introduction

This report forms part of a Preferred Project Report (PPR) prepared on behalf of the Sydney Church of England Grammar School (Shore) in respect to the Concept Application and Stage 1 Project Application made under Part 3A of the NSW Environmental Planning and Assessment Act 1979 for the proposed redevelopment of the site referred to as "Graythwaite" in North Sydney.

In 2009 the Sydney Church of England Grammar School (Shore) purchased the site known as Graythwaite in North Sydney. The Graythwaite site is located adjacent to the Shore's North Sydney Campus which forms the Senior and Preparatory Schools. The location of the Graythwaite site is shown in **Figure 1**.

Figure 1 – Graythwaite and Shore School Locality Plan



The Graythwaite site was purchased by Shore with the objective of integrating the site with the existing Shore site into a single school campus for both existing and future educational uses.

This report has been prepared in response to the authority and community submissions received in response to the amended proposal and revised Environmental Assessment (EA) after it was exhibited in November – December 2011.

This report addresses the issues raised in those submissions and the associated development of the "Preferred Project".

With regard to transport, the Preferred Project includes the following key amendments to the original proposal (as described in the Revised EA dated October 2011):

- Reduction in the size of the proposed new buildings as reflected in the revised Concept Application. This reduction will reduce the potential additional School population from 500 students and 50 staff to 450 children and 45 staff.
- A preferred option to increase the capacity of the School's afternoon student "pick-up" facilities in conjunction with Stage 2 works to accommodate potential increased populations at the School and to mitigate the associated potential traffic impacts.
- Proposal to improve existing and future school bus operations.

This report describes and assesses these changes with regard to transport aspects and responds to submissions made to the applications by authorities and other parties.

2 Preferred Project Modifications

2.1 Reduction in Building Areas

2.1.1 Reduction in Potential Additional Student & Staff Number

The Concept Application sought to set out a vision for the integration and development of the Graythwaite site as part of the Shore School site.

The original Concept Plan included the potential to accommodate an additional 500 students and some 50 staff within new buildings to be constructed on the Graythwaite site.

The Preferred Project as described in the Revised EA would reduce the proposed new West building floor area and thus reduce the potential additional student and staff numbers that could be accommodated at the School (i.e. the integrated existing Shore School site and Graythwaite).

The Preferred Project proposal would continue to be staged over some 10-15 years as follows:

- Stage 1: Conservation and restoration of Graythwaite House and associated buildings (**no additional students or staff**);
- Stage 2 : new buildings accommodating an additional 100 students and 10 staff;
- Stage 3 : new building accommodating an additional 350 students and 35 staff.

The proposed changes to potential additional students are summarised in Table 2-1.

Table 2-1 Summary of Modified Additional Student & Staff Numbers

Concept Plan Stage	Original Concept Application		Preferred Project Proposal	
	Students	**Staff**	**Students**	**Staff**
Stage 1	0	0	0	0
Stage 2	100	10	100	10
Stage 3	400	40	350	35
Total	500	50	450	45

2.1.2 Reduced Traffic Generation Potential of Additional Students and Staff

As noted in the revised Concept Application and Stage 1 Project Application transport assessment report[1] the proportion of new senior school and preparatory school students is not known. However, it is known that the preparatory school additional population would not exceed 100 students.

The traffic generation potential of the Preferred Project has been estimated on the worst case scenario of:

- Senior School : + 350 students
- Preparatory School : + 100 students
- Staff : + 45 staff

The estimated traffic generation for the Revised EA Project is summarised in Table 2-2.

[1] *Graythwaite Part 3A Concept Application and Stage 1 Project Application Transport and Accessibility Impact Assessment Report* (Halcrow, 4 October 2011).

Table 2-2 – Stage 3 Traffic Generation (Cumulative of Stages 1, 2 and 3)

	Prep School	Senior School	Total
Student No. Increase	100	350	450
Rate of Vehicle Drop Off / Pick-Up per student (One Way)	0.48 trips per student	0.24 trips per student	
Number of Student One Way Trips	48	84	132
Total Number of Student Trips (Inbound + Outbound)	96	168	264
Staff Trip Rate	0.5 trips / parking space	-	
No. of Staff Parking Spaces	41	-	
No. of Staff Trips	21	-	21
Total Vehicle Trips / Peak Hour	117	168	285

This represents a reduction in potential traffic generation of some 8% compared with the initial Concept Application proposal.

Should the proportion of Senior School students be greater than estimated above, then the estimate traffic flows of the Preferred Project would be less than the estimated 285 vehicle trips per peak hour.

2.2 Additional On Site Student Pick-Up Facilities

The revised Concept Application included a number of options for provision of an additional formal vehicle "pick-up" facility on the School site. These options were developed following feedback from community open days held during the EA process.

The full set of options was documented in the Transport and Accessibility Impact Assessment[2].

In response to submissions on the Concept Application, the Department of Planning and Infrastructure has requested that Shore School, in consultation with North Sydney Council, select a preferred option for the additional "pick-up" facility to be included in the Preferred Project.

2.2.1 Purpose of an Additional "Pick-Up" Facility

Currently, the only existing formal vehicle pick-up of students at the School is provided at the Preparatory School which is accessed via Edward and Mount Streets.

The purpose of the new pick-up facility is to provide additional capacity to accommodate for a possible increase in the Preparatory School population (nominally a maximum of 100 extra students to add to the current population of 240) that could be part of the Stage 2 approval and to relieve the pressure on the existing Edward Street facility.

2.2.2 Consultation with Council Officers

A meeting was held with Council officers (7 February 2012) to provide a briefing on the project and to obtain feedback from Council on the selection of a preferred option.

The following key principles were identified by Council for consideration in the selection of a preferred "pick-up" facility option:

- The extent of vehicle queuing area on Shore land is to be maximised so as to minimise the implications of vehicles queuing from the site on to the external road network;

[2] *Graythwaite Part 3A Concept Application and Stage 1 Project Application, Transport & Accessibility Assessment (Halcrow,* 4 October 2011).

- Significant changes to the operation of the road network are unlikely to be acceptable to the Local Traffic Committee;

- Minimise the number of vehicle access points (i.e. driveways) to and from the School site; and

- Minimise the impact to existing trees along the School's road frontages as these provide amenity and visual screening to adjacent residents.

The Council officers at the meeting noted that any preferred option put forward by the School would need to be approved by Council's Local Traffic Committee and then possibly the Council.

2.2.3 Description of the Preferred Pick-Up Facility Concept

The preferred option for the additional "Pick-Up" facility is Option 2 as shown in Appendix A.

The key features of this option include:

- Construction of an internal road providing a link between Union Street and Hunter Crescent;

- The link road will utilise the existing driveways at:
  - Union Street – car park access
  - Hunter Crescent

- The link road to include the existing circulation aisle within the car park beneath the tennis courts;

- Construction of a pick-up zone with capacity to accommodate a minimum of 4 vehicles adjacent to a designated student waiting area;

- Vehicles to enter via Union Street, access the pick-up area and depart to Hunter Crescent (i.e. one way flow through the School); and

- On site queuing area = approximately 100 metres or 16 vehicles.

Through discussions with residents and the School and our on site observations it is noted that the afternoon pick up period at the existing Edward Street pick-up facility is the critical period with regard to congestion on the surrounding road network.

As documented in the Transport and Accessibility Assessment Report3 the drop-off activities in the morning are spread out over a period of generally 90 minutes whereas the afternoon pick up generally occurs within a 15-30 minute window between 3:00pm – 3:30pm.

Hence the proposed "pick-up" facility will only operate in the afternoon to provide additional capacity during the peak pick up period.

2.2.4 Assessment of Preferred Concept

i. Demand for New Pick-Up Facility

The peak demand for an on site "pick-up facility" is associated with Preparatory school students. Senior School students have a significantly higher proportion of travel via public transport and after school sporting activities where students are bussed to sporting facilities at Northbridge.

The Preparatory School currently has 240 students. Surveys of the existing pick-up facility in Edward Street indicated that there is a peak pick-up demand in the order of 40 vehicles during a 15 minute period between 3:00pm and 3:15pm.

This equates to a rate of 1 vehicle for every 6 students arriving within a 15 minute period.

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[3] *Graythwaite Part 3A Concept Application and Stage 1 Project Application, Transport & Accessibility Assessment (Halcrow,* 4 October 2011)

Should Stage 2 of the Concept Plan be approved there is potential to increase the preparatory school population from 240 to 340 students.

Thus for Stage 2 the demand for the pick-up facilities is estimated to increase from 40 vehicles to 57 vehicles in the peak 15 minute period between 3:00pm - 3:15pm.

For the purposes of assessment, it is proposed that the number of students to be collected from a pick-up facility will be evenly distributed between the existing Edward Street facility and the new Union Street – Hunter Crescent facility, namely 29 vehicles at each location.

ii. Capacity of Proposed Pick-Up Facility

Observations of the existing Edward Street facility indicate that the average loading time per vehicle is 1:05 minutes. This was surveyed from the point where the vehicle pulls into the loading area, students are loaded into the vehicle and the vehicle pulls away from the loading area.

Based on these surveys the proposed pick-up facility which can accommodate 4 vehicles at once has a capacity to accommodate approximately 55 vehicles within a 15 minute period.

Therefore the proposed Union Street – Hunter Crescent pick-up facility could accommodate the likely peak 15 minute demand of 29 vehicles. In fact there is likely to be spare capacity giving the School greater ability to plan the distribution of the respective loads according to class sizes.

iii. Vehicle Queues

Queuing theory[4] has been applied to the proposed additional pick-up facility to determine the probability of vehicle queues extending back from the loading area, through the car park and onto Union Street.

[4] Transportation and Traffic Engineering Handbook (ITE) p303

The analysis is based on a theoretical capacity of 220 vehicles per hour with a 20% reduction for contingencies and a vehicle queuing length of 16 vehicles.

The queuing analysis presented in Appendix B indicates that the 95th percentile queue lengths to be:

- Demand of 40 vehicles per 15 minute period = 14 vehicles
- Demand of 29 vehicles per 15 minute period = 7 vehicles

The queuing analysis indicates that the proposed available queuing area is sufficient to accommodate vehicle queues associated with the pick-up facility on site.

iv. Intersection Operation

An aaSIDRA analysis was undertaken for the proposed site entry to the pick-up facility driveway in Union Street.

The analysis was based on the surveyed two way flows along Union Street during the operation of the proposed pick-up facility (namely 3:00pm – 3:30pm) and a peak demand of 40 vehicles in a 15 minute period.

The analysis provided the following results:

- Intersection Level of Service: LoS A
- Average Intersection Delay (worst movement): 10 seconds / vehicle
- 95th percentile queue in Union Street: 9 metres (1-2 vehicles)

The analysis indicates that there would be minimum vehicle delays and queuing in Union Street during the period of the proposed pick-up facility operation.

v. Sight Distances at Union Street

Under the preferred option, vehicles in the proposed pick-up facility will be entering from Union Street. No exit movement for these vehicles would occur at Union Street. It is proposed that during the operation of the pick-up facility all vehicles will exit to Hunter Crescent.

The available sight distances both from vehicles waiting to turn into the Union Street driveway to approaching cars and from cars approaching the site along Union Street to a potential car queuing in Union Street waiting to turn into the driveway comply with the minimum AS2890.1 requirements for driveway access.

It is observed that Option 1 of the Revised EA which is similar to Option 2 except that traffic passes between the car park and Union Street would have similar traffic characteristic. However this was not favoured by Council and the community due to the potential loss of landscaping between Union Street and the car park.

vi. Summary

The provision of an additional on site pick-up facility has been included as part of the preferred concept application. The provision of an additional facility has been in part a response to community feedback and the School's desire to address existing and potential future issues associated with congestion in Edward Street arising from the capacity of the existing pick-up facility.

The preferred option has been selected to be Option 2 which provides a one way link road through the School running between Union Street and Hunter Crescent.

The analysis presented in this assessment indicates that the preferred pick-up option can operate satisfactorily with regards to containing vehicle queues on site and minimising the implications and modifications to the surrounding road network.

As such it is concluded that the preferred option (Option 2) is consistent with the key principles identified by Council for the selection of a preferred option.

2.3 On Site Car Parking Provisions

The Concept Application proposed to provide the following parking spaces on the Graythwaite site:

- Stage 1: retention of existing 7 on site visitor parking spaces;
- Stage 2: provision of 41 parking spaces in a basement parking area; and
- Stage 3: no additional parking.

Parking provided in Stage 2 would be constructed for both Stage 2 and Stage 3.

The preferred pick-up option described in Section 2.3 above will result in the loss of 4 existing car spaces from the existing car park under the tennis courts in order to facilitate the through traffic. This enhances the need for the proposed additional parking associated with Stage 2.

The Preferred Project makes no changes to the proposed Concept Application in respect of the quantity of additional on site parking provisions.

2.4 On Street School Bus Operations

The Revised Concept Application sets out the constraints which restrict the provision of on-site bus facilities.

It is recognised by the School that improvements to the existing bus facility operations in Mount Street can be made.

As part of the Preferred Project the following bus stop options are proposed:

- Retain the existing bus stops in Mount Street;
- Operate an additional bus stop in William Street, north of Blue Street; and
- Utilise the existing public bus stops in Blue Street at North Sydney Railway station.

It is envisaged that all of the options identified could be used as part of a package of measures to accommodate bus travel demand.

Subject to Council approval it is considered that an additional bus stop facility could be provided in William Street, north of Blue Street. This would require the temporary reallocation of some time restricted metered on street parking spaces (approximately 4 spaces) during the afternoon operation of the bus stops (3:00-4:00pm on school days).

In addition, the School is in the process of investigating the potential to utilise the public bus stops in Blue Street for a limited number of their buses.

2.5 Implementation of a Workplace Travel Plan

Shore School has made a commitment to prepare and implement a Workplace Travel Plan for the existing School population, namely staff and students.

Any future development of the School, namely the Revised EA Project for Graythwaite, will need to be incorporated into this overall plan for the School.

The information obtained from the 2010 student and staff travel survey (as reported in the Concept Application and Stage 1 Project Application transport report [5] has provided the initial baseline data from which to develop a Workplace Travel Plan.

Based on the travel survey it is estimated that some 70% of all staff currently drive to School and park either on site or on street. The demand for parking occurs despite the proximity of the School to good public transport.

The demand for parking reflects the travel needs of staff which include early starts, late finishes, flexible / part time hours and multiple trips within a given day, i.e. teaching at the School then travel to outside locations for extra curricula activities. It is noted that each teaching staff member is involved with at least two extra curricula activities outside of normal teaching hours.

[5] Graythwaite Part 3A Concept Application and Stage 1 Project Application Transport and Accessibility Impact Assessment Report (Halcrow, 24 November 2010)

These factors need to be considered when developing an effective Workplace Travel Plan. The simplistic notion of restricting the provision of on site car parking may not necessarily be the most effective mechanism to achieve a shift in travel behaviour.

The Shore School is currently considering a range of travel demand measures to be implemented as part of a School Workplace Travel Plan.

These measures include:

- Public Transport:
  - Provision of clear public transport information to staff and students
  - Collaboration with local public transport providers to improve services

- Car Sharing:
  - Introduction of a car sharing scheme with preferential on site parking space allocation for car share users
  - Subsidisation of costs associated with membership to privately operated car share companies (i.e. Go-Get).

- Walking:
  - Promotion of safe local walking routes including the provision of route maps
  - Improved access to showers, changing facilities and lockers for storing clothes

- Cycling:
  - Provision of cycle route maps and improvements to signage
  - Secure, well lit, covered cycle storage include pumps, showers, changing facilities and lockers
  - Formation of a bicycle users group (BUG)
  - Assistance to staff in accessing information about safe cycling, appropriate clothing, local cycle routes etc
  - Pool bikes for use for short trips

- Car Park management:
  - Review of car parking policy and introduction of a management strategy

- Review of the issuing of car park permits to ensure a fair system , based on agreed criteria e.g. operational need
- Consider restrictions of parking allocation to staff. The needs of staff, visitors and event parking demands need to be considered with the objective of reducing the impacts of School parking on local surrounding streets.

- Marketing and promotion:
  - Provision of information to students, staff and visitors on how to access the site by means other than the car
  - Dissemination of information via notice boards, Shore newsletters, website links and information packs for new students and staff (incorporate into the orientation process).

3 Response to Submissions

3.1 Overview

The key traffic and transport issues raised in the public submissions were summarised to be:

- Impacts on local traffic network operation;
- Impacts on local on street parking and under provision of on site car parking;
- Operation of drop off / pick-up facility;
- Bus parking;
- Traffic safety;
- Traffic assessment methodology;
- Student driver behaviour; and
- Construction traffic.

Authority submissions which raised traffic and transport issues were also received from:

- North Sydney Council; and
- NSW Roads and Maritime Services (RMS)

The RMS submission stated the RMS had *"reviewed the revised environmental submission and raises no objection to the revision."*

North Sydney Council's submission objects to the development proposed in the Revised Environmental Assessment. Key issues for the objection included:

- Provision of on site car parking should be reduced;
- On site bus facilities should be provided;
- Provision of a formal pick-up / drop off facility for students on site; and
- General traffic and parking impacts.

3.2 Response to North Sydney Council Submission

As part of North Sydney Council's submission, Council notes that the amended proposal and Revised EA was referred to an external traffic consultant (Colston Budd Hunt and Kafes Pty Ltd) for review.

The findings of the Colston Budd Hunt and Kafes review were included in the Council officer's report to Council which forms part of the submission to the REA.

The review's conclusions included that:

- The proposed car parking provision is considered appropriate;
- A condition of consent should be included requiring appropriate on site bicycle parking to be provided as part of Stage 2 and Stage 3 developments;
- The surrounding road network would be able to cater for the additional traffic from the proposed development;
- An additional bus zone, subject to council approval should be provided in William Street; and
- An on site set down and pick-up facility should be provided on a new road connection between Union Street and Hunter Crescent.

In particular the review stated that:

> *"We do not consider that provision for buses on the site would be an efficient or appropriate use of land. Buses service the site for short periods, generally during the afternoons, and would be most appropriately accommodated on street. "*
>
> *Providing a relatively small quantity of additional parking (beyond the DCP maximum) would also have a number of benefits. Teachers often travel with equipment and materials for which other travel modes are impractical. The additional on-site parking would mean there is less demand for on street parking in the vicinity of the site, during the day, when the school is operating, and at night, when residents in the area return home and there may be other activities occurring at the school."*

Notwithstanding the findings of the traffic review sought by Council, which supported the amended proposal, Council has objected to the proposal on grounds including traffic, parking and bus operations.

3.3 Response to Key Transport Issues – Public Submissions

3.3.1 On Site Car Parking Provision and Impacts on Local On Street Parking

Over 50% of the public submissions which raised issues regarding traffic and parking related to an under provision of on site parking both for the existing School operations and for the anticipated growth as set out in the Concept Application (i.e. Stage 2 and Stage 3).

The general public view is contrasted with the submissions of North Sydney Council which seeks to reduce the proposed on site parking provision, namely the proposed 41 basement parking spaces to be constructed as part of Stage 2.

The School Travel Survey indicated a relatively high reliance on private motor vehicle for staff travel to and from School. This occurs despite the proximity to good public transport and short supply of on site and on street parking.

It is acknowledged that a shift in travel behaviour is required for the existing and future School populations. This will be achieved through the Workplace (Green) Travel Plan to be developed and implemented by the School.

The North Sydney Council submission agrees in principle to the retention of the 7 existing users parking rights on the Graythwaite site to be used for visitors to the Administrative offices of the School in the refurbished Graythwaite House. However, it overlooks the fact that the former use of the Graythwaite site enabled up to 25 parking spaces (as identified in the Revised EA and traffic report). Thus, the site still has existing use rights for an additional 18 parking sites.

Thus, the proposed parking provision, namely retaining the 7 existing visitor spaces on Graythwaite and providing 41 spaces for Stage 2 (23 additional and 18 existing), represents a fair balance between restrictive on site parking policies and the reduction of impacts to the Shore's neighbours associated with demand for on street parking.

Also, School and public use of Graythwaite House for special events would benefit from the availability of the parking spaces under the new East Building, especially at night.

3.3.2 Impacts on Local Traffic Network Operation

Submissions received which related to implications of the Concept Application to the operation of the local traffic network generally raised issues with the operation of the School's drop off /pick-up facility in Edward Street and the bus stop operation in Mount Street. Both these issues are addressed separately below.

With regard to the other local traffic implications, it is noted that the Stage 1 Project Application would not increase student or staff numbers. Any future increase in School population on the Graythwaite site (i.e. arising from Stage 2 and Stage 3 implementation) will be considered in detail as part of future development applications. This is considered appropriate as the timing of the Stage 2 and Stage 3 development has not yet been defined, and the detailed proposal will need to consider the specific traffic and parking conditions at that future time.

Notwithstanding the above, the Concept Application traffic assessment attempted to consider a worst case scenario for the School development based on current known traffic conditions.

Council's Officers Report to the original EA (8 March 2011) indicated that Council agreed that the surrounding road network could physically accommodate the additional traffic but highlighted the amenity implications associated with a sudden significant increase in the percentage of traffic flows along local streets. Since the original EA the School population has been revised down (and therefore also the potential traffic generation) as part of the Preferred Project.

The traffic assessment has considered the growth of school population in two distinct stages. However this is unlikely to occur but rather the new buildings will be constructed to accommodate a nominated future population. Actual enrolments and hence School populations will increase gradually over numerous years rather than on Day 1 of the new stage.

The Preferred Project has included the identification of an additional pick-up facility and bus stop arrangements which would be implemented as part of Stage 2 works.

3.3.3 Operation of an Additional Pick-Up Facility

The operation of the Preparatory School drop-off / pick-up facility in Edward Street for existing conditions and with an additional student population has been raised in numerous public submissions and that of North Sydney Council.

Section 2 of this report has identified the preferred option for the additional pick-up facility and provided an assessment of its operation.

Essentially the additional pick-up facility will reduce the existing demand and associated congestion at the existing Edward Street pick-up facility.

3.3.4 Bus Parking

The existing and proposed School bus operations in Mount Street has been discussed and clarified in Section 2 of this report.

However, through the submissions, the issue of a future intensification of the vehicle activity and in particular bus movements associated with the Mary McKillop Place Museum has been highlighted.

Council has indicated that the number of bus stops currently utilised by the School may be reduced to accommodate the demands of the Mary McKillop Place Museum.

This indicates that alternative bus stop locations for the School and associated management measures should be considered regardless of the proposed Concept and Stage 1 Project Applications for Graythwaite.

As part of the development of the concept plan for Graythwaite the provision of on site bus and coach loading / unloading areas was considered.

However, while the School has a significant length of street frontages, the practicalities of providing bus access and associated turning and circulation areas within the School would not be feasible.

In particular:

- there are significant heritage constraints associated with providing a satisfactorily compliant entrance / exit width, internal road and turning circle on the Graythwaite site;
- it is considered inappropriate to bring buses along Edward Street;
- the extent of Mount Street frontage is limited and would require the permanent removal of existing car parking and bus stops;
- existing School buildings along the William Street frontage; and
- Union Street car park access and inability to separate bus and car flows.

It is also noted that it is not standard practice to bring school buses onto site but rather to utilise kerb side road space.

3.3.5 Traffic Safety

Matters relating to traffic and pedestrian safety were raised in numerous submissions. Principally, these relate to the operation of and conflicts at the drop-off / pick-up facility and the Mount Street bus stops. The options to address these conflicts have been discussed above.

3.3.6 Traffic Assessment Methodology

Some 6 submissions raised issues regarding the "flawed" assessment methodology used in the traffic assessment. In particular the use of and results from the School Travel Survey.

The traffic and parking assessment undertaken as part of the Concept Application and Stage 1 Project application was undertaken in accordance with the RTA's *Guide to Traffic Generating Developments* as specified in the Director General's Requirements.

It is also noted that in the North Sydney Council Officer's Report on the matter (8 March 2011), Council's traffic engineers generally agreed with the various traffic generation assumptions used in the project assessment.

Several public submissions commented that the use of the Shore Travel Survey was flawed. We strongly disagree with these comments.

The undertaking of the School Travel Survey is considered to provide good baseline information on existing School travel behaviour, and more importantly providing some insight into the reasons behind such behaviours.

Specifically in response:

- The return rate of nearly 50% is considered to be a good response rate and appropriate for use in planning purposes;
- The survey day was considered to be a typical school day, with normal classes (i.e. no holidays or study leave) and no major events. There are variations to the daily activities at the School. It was not the purpose of the Travel Survey to capture each and every detail of travel to and from the School. The travel survey has been used and will be used further as a planning tool to assess, manage and modify travel patterns associated with the School;
- Bank Street parking was not specifically included in the parking locations but was picked up as part of the "other locations"; and

- The "skipped question" references reflect that the question was not relevant to the particular respondent. For example, if a student arrived at school by train, as many do, it is not relevant to answer a question about where they parked their car, hence the skipped question. The online survey instructed respondents to skip particular following questions based on their response to a particular question.

3.3.7 Student Driver Behaviour

Several submissions raised issues relating to existing student driver behaviour and use of on street parking.

It is noted that students with drivers licenses, like other members of the community, are entitled to drive on the public road and park on local streets where legally permitted.

Notwithstanding the above, inappropriate behaviour should be reported to the School via the establish lines of communication.

Furthermore, the School should review and amend if necessary student driver policies and management measures.

3.3.8 Construction Traffic Management

As noted in the Concept Application and Stage 1 Project Application traffic report, detailed planning for, assessment of and development of impact mitigations for construction traffic during construction stages will be undertaken prior to construction activities.

It is noted that North Sydney Council have provided a list of draft consent conditions as part of their submission which includes the requirement for the preparation of a Construction Traffic Management Program for Council approval prior to the issue of the Construction Certificate for each stage.

The addressing in detail of the construction traffic implications of the development is considered an appropriate approval condition.

3.3.9 Workplace Travel Planning

As detailed in Section 2 above, the School has committed to prepare, implement and maintain a Workplace Travel Plan for the overall School whether development of Graythwaite proceeds in the immediate term or not.

It is noted that North Sydney Council have provided a list of draft consent conditions as part of their submission which includes the requirement for a Workplace Travel Plan to be prepared prior to the occupation certification for Stage 2.

While the preparation of a Workplace Travel Plan is not necessarily linked to an approval of a particular stage of development, the inclusion of this condition and associated timing is considered appropriate.

4 Conclusions

This report has set out the traffic and transport measures included in the Preferred Project proposal for the Graythwaite site.

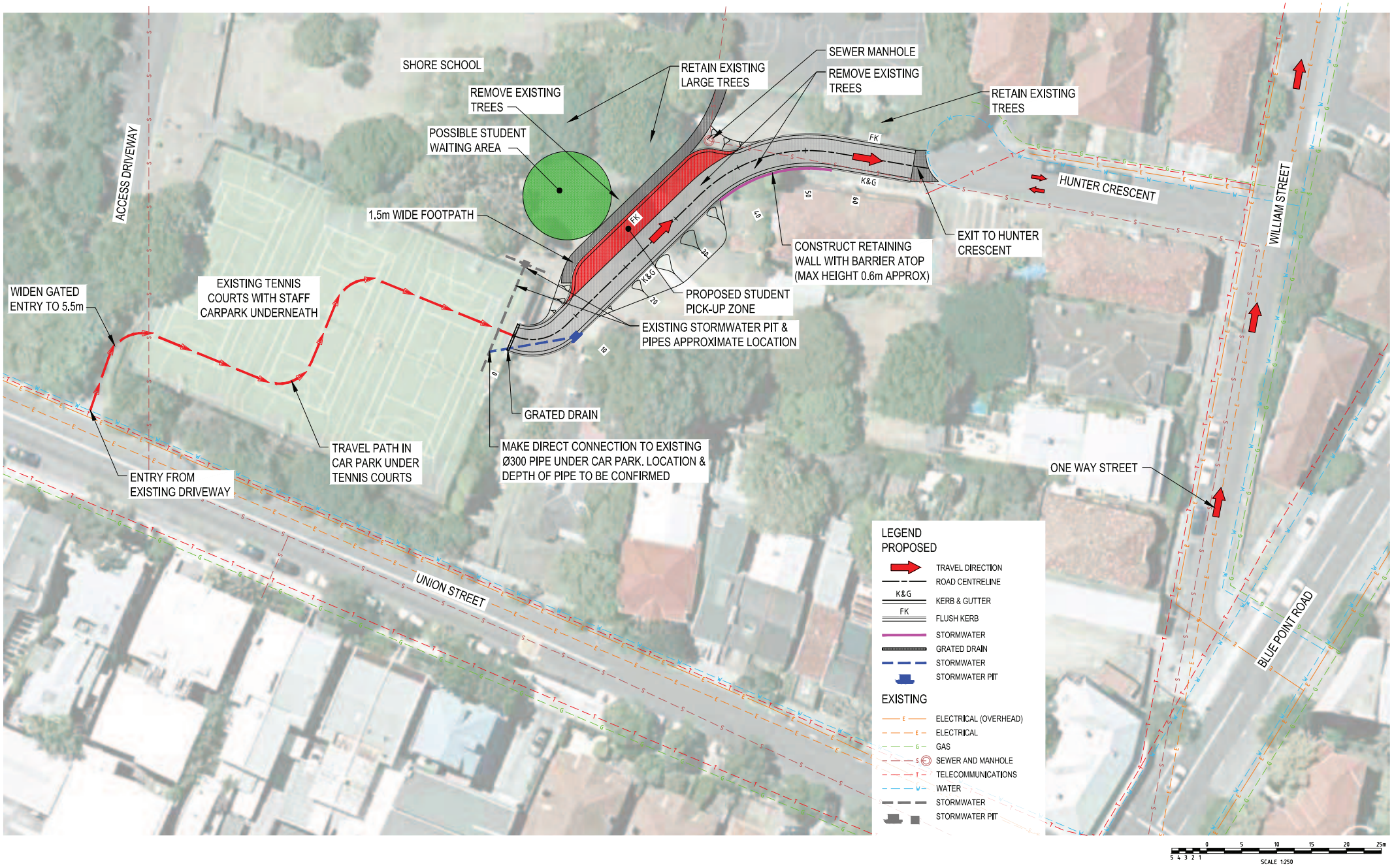
The Preferred Project includes a number of amendments to the concept plan which affect traffic and transport, namely:

- Reduction in the size of the proposed new buildings as reflected in the Concept Application. This reduction will reduce the potential additional School population from 500 children to 450 children and 50 staff to 45 staff;
- Proposals to increase the capacity of the pick-up facilities at the School and to mitigate the adverse implications; and
- Proposal to improve existing and future school bus operations.

Responses are provided in this report to clarify matters raised in submissions.

Overall it is concluded that subject to the implementation of measures outlined in this report that the transport aspects of the proposal would be satisfactory.

Appendix A On Site Pick-Up Facility - Preferred Option



SHORE SCHOOL NORTH SYDNEY

PICK-UP ZONE DESIGN CONCEPTS

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910 Pacific Highway, Gordon, NSW Australia 2072
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Quality Endorsed Company

OPTION 2

UTILISE EXISTING CAR PARK FOR THOROUGHFARE

25/08/2011

600321-SK03(2)

Appendix B Pick-Up Facility – Queuing Analysis

Attachment B - Vehicle Queuing Analysis

Queue Analysis – 29 vehicles per 15 minute peak period

arrival rate	116	vph
service rate	198	vph

Probability of "n" units in the system

n = no. of queued vehicles	Prob.	Prob n or more
0	41.4%	1.000
1	24.3%	0.586
2	14.2%	0.343
3	8.3%	0.201
4	4.9%	0.118
5	2.9%	0.069
6	1.7%	0.040
7	1.0%	0.024
8	0.6%	0.014
9	0.3%	0.008
10	0.2%	0.005
11	0%	0.003
12	0%	0.002
13	0%	0.001
14	0%	0.001
15	0%	0.000
16	0%	0.000
17	0%	0.000
18	0%	0.000
19	0%	0.000
20	0%	0.000

Queue Analysis – 40 vehicles per 15 minute peak period

arrival rate	160	vph
service rate	198	vph

Probability of "n" units in the system

n = no. of queued vehicles	Prob.	Prob n or more
0	19.2%	0.998
1	15.5%	0.806
2	12.5%	0.651
3	10.1%	0.526
4	8.2%	0.425
5	6.6%	0.343
6	5.3%	0.277
7	4.3%	0.223
8	3.5%	0.180
9	2.8%	0.145
10	2.3%	0.117
11	2%	0.094
12	1%	0.076
13	1%	0.061
14	1%	0.049
15	1%	0.039
16	1%	0.031
17	1%	0.025
18	0%	0.020
19	0%	0.016
20	0%	0.012