Traffic

TTW

TaylorThomsonWhitting

Interim Traffic Statement

Abercrombie Precinct Re-Development Project

for John Holland Group

TTW-BUS-TRAFFIC-RPT-018-B

23 July 2013

121784UTB

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Revision Register

Rev	Date	Prepared By	Approved By	Remarks
1	19/7/2013	PD	PY	Interim Traffic Statement
2	23/7/2013	PD	PY	Signed

1.0 BACKGROUND

Abercrombie Precinct Re-development Project (MP07_0158) has the Minister of Planning & Infrastructure approval subject to a number of conditions of consent being satisfied.

The John Holland Group is the University of Sydney's Principal Builder for the project and is submitting a Section 75W application to obtain construction certificate approval. This traffic statement has been prepared in support of this application.

Since the preparation of the original Transport Impact Assessment (Rev B) 18 April 2012 there have been changes to the development proposal. The original Transport Impact Assessment now contains anomalies in the text which will need to be revised and updated. An Addendum Traffic Impact Report will be prepared and submitted at a future time.

The key traffic change is that the proposed vehicle access to the University of Sydney Abercrombie Street Re-Development, Darlington Campus, Corner of Abercrombie Street and Codrington Street, Darlington will be to and from Darlington Lane.

The key traffic issues arising from the change of the access point from Abercrombie Street to Darlington Lane include:

- Safe and functional access to and from the site driveway off Darlington Lane
- Safe and functional access to and from the immediate intersections providing access to Darlington Lane
- Traffic impacts on the immediate existing intersections providing access to Darlington Lane.

This Interim Traffic Statement briefly addresses these key traffic issues.

Figure 1.0 shows the surrounding road network connectivity with the proposed development.

The proposal at ground level is shown in the Architectural drawing prepared by KannFinch that is contained in Appendix B:

- 6423 A2204 Rev C – Plan Level 1

The John Holland Group on 20 June 2013 submitted a report to Planning and Infrastructure prepared by TTW titled - Abercrombie Precinct Re-Development Design Modifications Traffic Statement, 28 June 2013. This report is relevant to this application as it addressed the safety, functional and operational traffic issues associated with the development access being located off Darlington Lane.

The report made recommendations that will be incorporated into the development proposal at the design development phase of the project and Planning & Infrastructure on 9 July 2013 supported the report providing approval to the design and layout of the car park and vehicle access in accordance with condition B4 of the development consent.

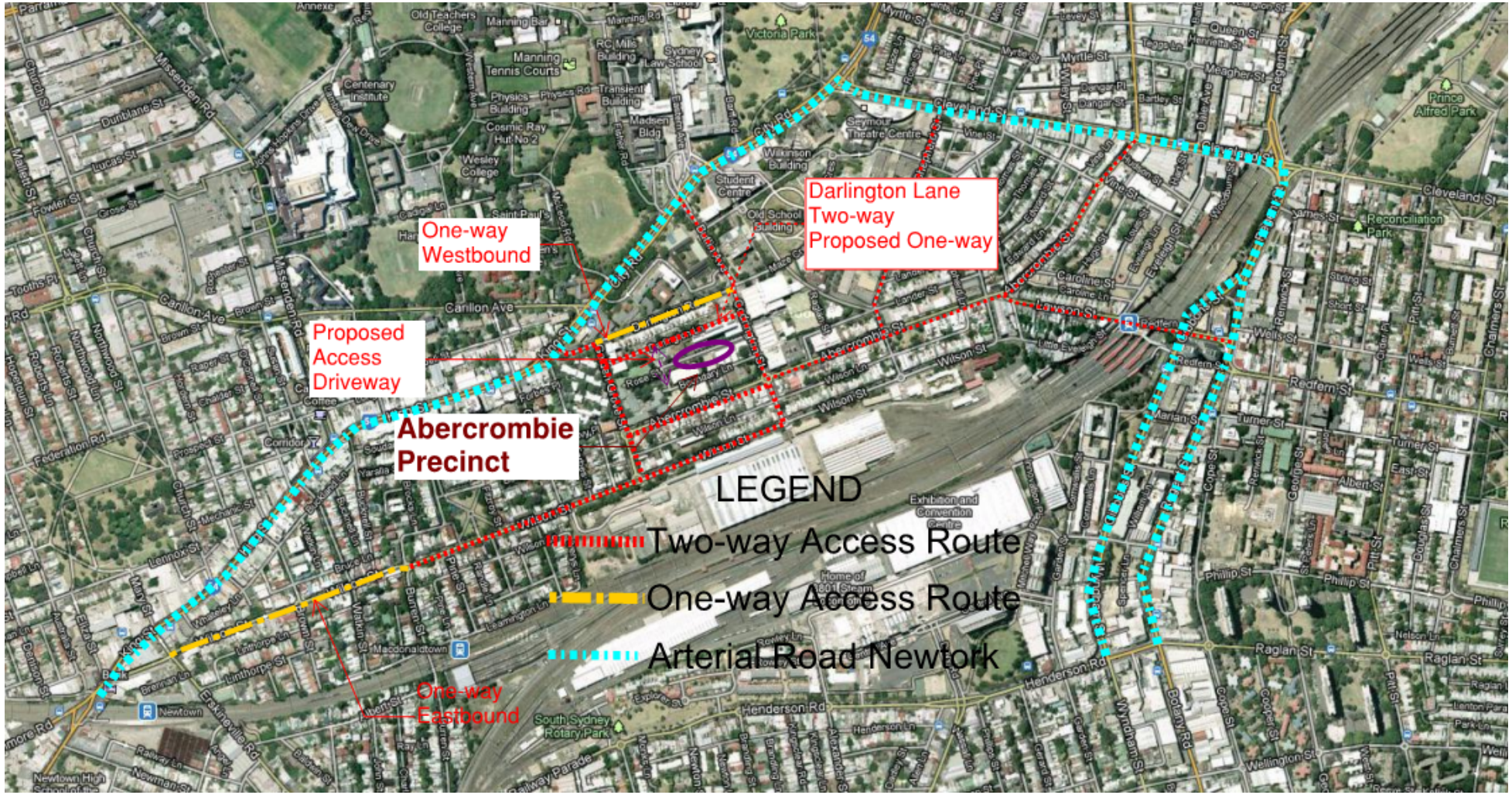

Figure1.0 Road Network Connectivity to the Abercrombie Precinct

2.0 SAFE & FUNCTIONAL DRIVEWAY ACCESS

2.1 Sight Distance

Sight Distance Drivers'

Drivers' exiting the access driveway will need visibility to oncoming eastbound and westbound vehicles. For the speed limit of 50km/hr the minimum sight distance provision to westbound and eastbound traffic of 45m for cars and 69m for trucks is available. The angle formed by the access driveway intersection with Darlington Lane is the desirable 90 degrees and the 5 percent longitudinal gradient for the 7m wheel base length of the medium rigid vehicle measured from boundary line provides the best sight lines for exiting vehicles.

Pedestrian Sight Distance.

Clear sight lines between drivers' exiting and pedestrians on the Darlington Lane frontage will be maintained by the provision of sight triangles. The sight triangles at the junction of the driveway and Darlington road are larger than the dimension requirements outlined in AS2890. Sight distances will be maintained by limiting fencing, walls, landscaping and vegetation to less than 0.6 metre in height at the driveway junction with Darlington Lane.

The Darlington Lane access driveway sight distance requirements are shown in **Figure 2.0**

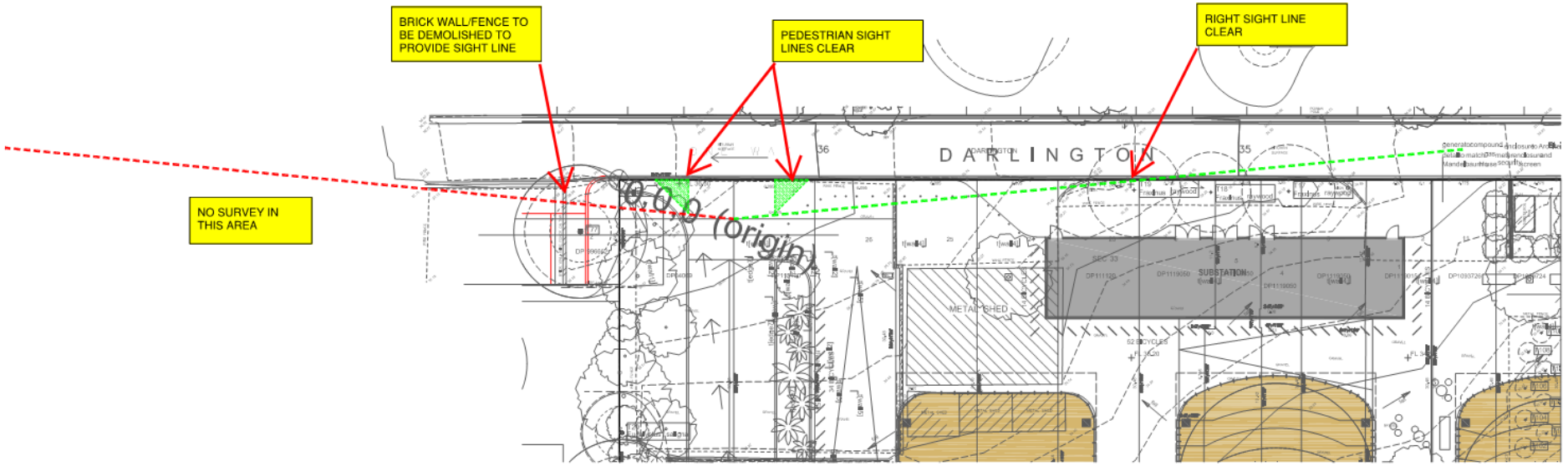

Figure 2.0 Darlington Lane Access Driveway Sight Distance Requirements

2.2 Darlington Lane Access

Darlington Lane has a 4m wide road carriageway and is too narrow for opposing vehicles to pass each other. The proposal allows for one-way access for both cars and the medium rigid delivery vehicles.

Driveway

The turning path analysis for the B99 car and medium rigid vehicles (MRV) at the access driveway are shown in Appendix A.

Because Darlington Lane is narrow there is potential for opposing through and/or turning vehicle movements to create traffic congestion or conflict on the driveway crossover, if the driveway width is too narrow, and in Darlington Lane due to the narrow 4m width of the lane carriageway. Vehicles may need to reverse to allow an oncoming vehicle to pass.

The proposed driveway entry and exit will cater for the inbound and outbound car (B99) turning movements and, a car (B99) and the medium rigid delivery vehicle (MRV) turning movements to occur at the same time to avoid conflict.

Under these circumstances the driveway is to be designed to accommodate the simultaneous turning paths of both a car (B99) and truck (MRV).This is consistent with AS2890 guidelines that a vehicle should be able to enter an access driveway without being required to stop in the adjacent public road.

Darlington Lane

The one-way traffic movements could be eastbound or westbound, and is subject to consideration of how the proposed one-way traffic movements will fit with the wider area traffic management issues and road authority approvals. The approval process will firstly require the preparation of a TMP for RMS approval and, then the concurrence of Sydney City Traffic Committee and Council approval.

3.0 DARLINGTON LANE INTERSECTION'S SAFE AND FUNCTION ACCESSS

The main criterion for safe access to and from Darlington Lane intersections with Codrington Street and Golden Grove Street is the stopping sight distance. The function aspects are dependent on the adoption of one-way movement and will be addressed in the Addendum Traffic Report.

The stopping sight distance criterion for intersections is contained in Austroads Part 3A Geometric Design. The stopping sight distance is the distance required for a driver to stop the vehicle to avoid a collision with a turning vehicle at the intersection or a stationary hazard on the roadway. The stopping sight distance standards for cars and trucks have been applied to the intersection of Golden Grove Street and Darlington Lane and the intersection of Codrington Street and Darlington Lane that provide immediate access to Darlington Lane.

Both these intersections provide immediate vehicle access to and from the Abercrombie development's Darlington Lane access driveway. Stopping sight distance (SSD) analysis results for each approach to an intersection for the 50km/hr statute speed limit is outlined in the following tables. The desirable SSD for a car is 55m (Table 5.4 Part 3 Geometric Design) and the desirable SSD for a truck is 62m (Table 5.5 Part 3. Geometric Design).

Observations on site indicate that the vertical and horizontal geometry of Golden Grove Road, Codrington Street and Darlington Lane are linear. The alignments provide uninterrupted lines of sight between the driver's eye (1.10m) and a 0.2m high stationary object on the road at the junction of the T- intersections. Right turn and left turn turning movements are possible at both these intersections.

Golden Grove and Darlington Lane Intersection – Estimated Stopping Site Distance			
Approach	**Northern Approach**	**Southern Approach**	**Eastern approach**
Golden Grove Street	49m for car & truck	Greater than 55m for car & 62m for truck	-
Darlington Lane	-	-	Greater than 55m for car & 62m for truck

Speed 50km/hr and R_T=2.0s

Codrington Street and Darlington Lane Intersection – Estimated Stopping Site Distance			
Approach	**Northern Approach**	**Southern Approach**	**Western approach**
Golden Grove Street	Greater than 55m for car & 62m for truck	Greater than 55m for car & 62m for truck	-
Darlington Lane	-	-	Greater than 55m for car & 62m for truck

Speed 50km/hr and R_T=2.0s

The desirable stopping sight distance in accordance with Austroads Part 3A Geometric Design is available on the approaches to the intersections, except the Golden Grove Street northern approach to Golden Grove Street and Darlington Lane intersection. There is an estimated 49m of stopping distance to a vehicle turning right into Darlington Lane or left and right from Darlington Lane or to an object on the road surface in Golden Grove Street opposite the Darlington Lane.

The 49m SSD measured around the 90 degree bend at the junction of Golden Grove Street and Darlington Street matches the stopping sight distance requirements (40m-car and 44m-truck) for 40km/hr speed limit. Under normal conditions the 90 degree bend has the effect of traffic calming and drivers' would transit this tight 90 degree bend (radius 12m) at a lower speed (estimated to be 25km/hr) to remain within the traffic lane. The stopping sight distance required at 25km/hr is estimated to be 22m for a car and 23m for a truck. This is less than the 49m measured.

There is sufficient stopping sight distance available for the northern approach due to the traffic calming effect of the 90 degree bend at the junction of Golden Grove Street and Darlington Lane.

4.0 TRAFFIC IMPACTS ON EXISTING INTERSECTIONS

The operational performance of the road network in the urban area such as Darlington is controlled by its intersections. ARUP's Transport Impact Assessment includes traffic analysis and intersection traffic modelling using SIDRA that reported on the level of service and delay at key intersections providing access to the Abercrombie Precinct development.

4.1 Traffic Analysis

Traffic Generation

It is estimated that there will be approximately 134 peak hour vehicle arrivals at the University campus. These are existing staff and students already attending on-campus. The proposal will not be generating additional traffic volumes on the surrounding road network.

The operational and functional performance of the intersections providing access to the University of Sydney, School of Business was obtained from the Traffic & Transport Impact Assessment of the North Eveleigh Development. This report included cumulative traffic generation from the North Eveleigh Development, Abercrombie Development and the associated Child Care Centre.

Networking Modelling

The cordon for the Strategic Traffic modelling of the Darlington road network is shown in **Figure 3.0**

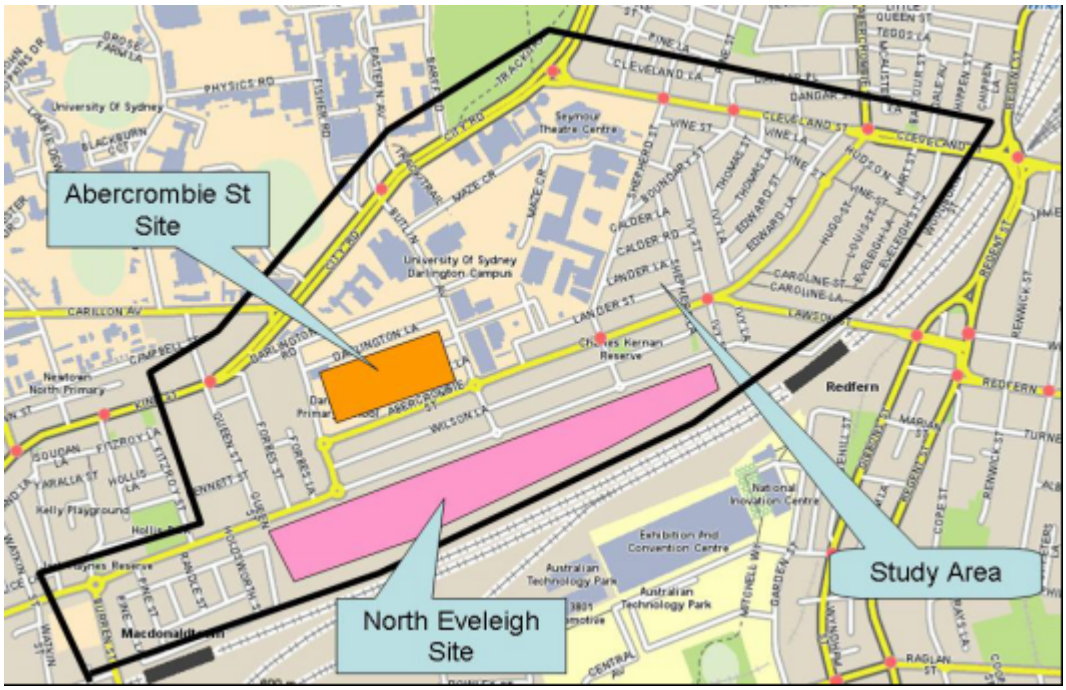

Figure 3.0 Cordon for the Traffic Modelling of the Darlington road network

The model was calibrated against RTA TCS Scats Data, cordon counts and screen line counts. The traffic model incorporated the local area future traffic generating develop, including the University of Sydney Abercrombie campus up to 2016.

The traffic modelling outlined in the original Transport Impact Assessment (Rev B) 18 April 2012 indicates a comprehensive approach with traffic generation rates for the new land use activity applied in accordance with the RTA Guidelines to Traffic Generating Developments, the trip distribution as per 2004 University of Sydney Transport Survey results (Workers - JTW modal split and Student travel mode) and an allowance for traffic growth and forecast traffic levels to 2016 in the road network.

4.2 Intersection Modelling Results

The key network intersections modelled included:

- Abercrombie Street/Codrington Street,
- Abercrombie Street/Golden-Grove Street
- Butlin Ave/City Road
- Golden-Grove Street/City Road(King Street)

The traffic modelling analysis with forecasted (2016) traffic loadings applied to the key intersections providing access to the University of Sydney Abercrombie Precinct development showed that all intersections had a good level of service (LoS). i.e. A or B indicating that the network intersections providing immediate access to the site will operate at low levels of average delay per vehicle (<20 secs/veh).

The assignment of traffic flows to intersection approaches will be operationally different due to the site access being relocated from Abercrombie Street to Darlington Lane. However given the low to moderate volume of traffic generated by the development and that the surrounding existing key intersections are reported in the ARUP Transport Impact Assessment (Rev B) 18 April 2012 to have spare capacity with that delays are

acceptable, it is reasonable to presume that the redistribution of traffic flows will not significantly alter the operational performance (LoS and delay) of these key intersections that provide access to Abercrombie Precinct development.

The intersections of Golden Grove and Darlington Lane and Codrington Street and Darlington Lane where not reported upon. These will be included in the Addendum Traffic Report.

5.0 CONCLUSIONS

The Abercrombie Precinct Re-Development Design Modifications Traffic Statement, 28 June 2013 submitted and adopted by NSW Planning and Infrastructure commented on the safe and functional access to and from Darlington Lane by way of the driveway and existing local road network intersections. The safe and functional access issues addressed include:

- Darlington Lane driveway driver and pedestrian sight distance
- Darlington Lane accessibility
- Stopping Sight distance at key intersections in the local road network that provide access to the proposed development

The application of the traffic engineering principals demonstrated that the driveway accommodating the simultaneous turning movement of a B99 car and 8.8m medium rigid vehicle and, existing key intersections providing access to and from Darlington Lane comply with the safety and functional requirements of Australian Standards (AS2890.1 & 2) and Austroads.

While the traffic assignment is operationally different due to the site access being relocated from Abercrombie Street to Darlington Lane it is reasonable to presume that the redistribution of traffic flows will not significantly impact on the spare capacity and acceptable delays outlined in ARUP's Transport Impact Assessment (Rev B) 18 April 2012.

An Addendum Traffic Impact Report will be prepared and submitted at a future time addressing the other traffic issues associated with the development.

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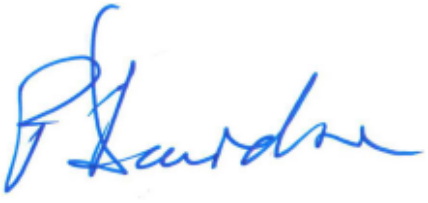

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Engineer

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PAUL YANNOULATOS
Technical Director

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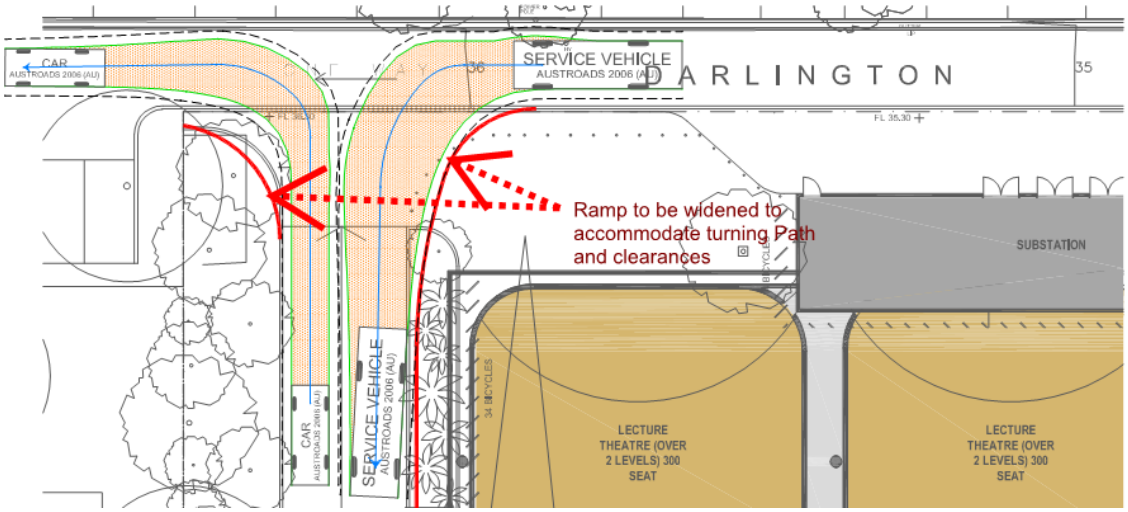
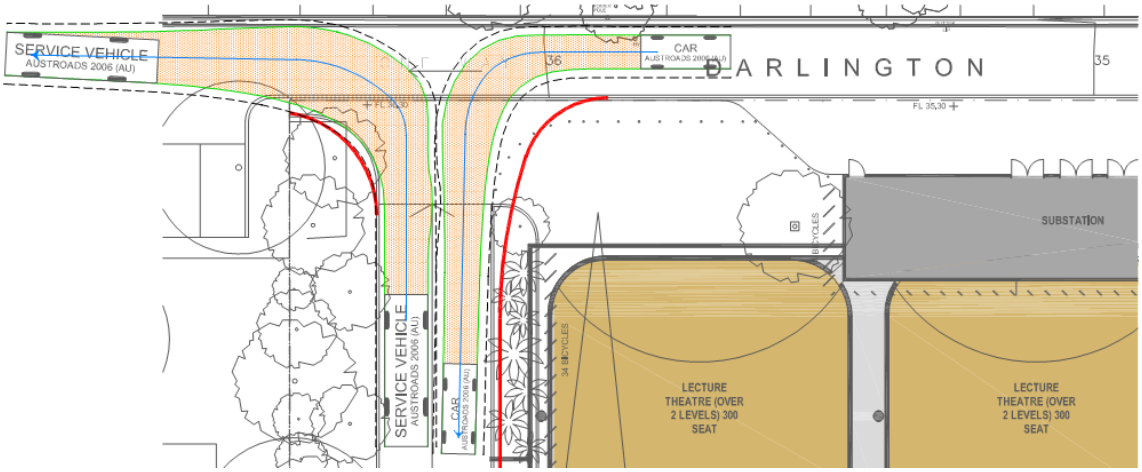
APPENDIX A: TITLE

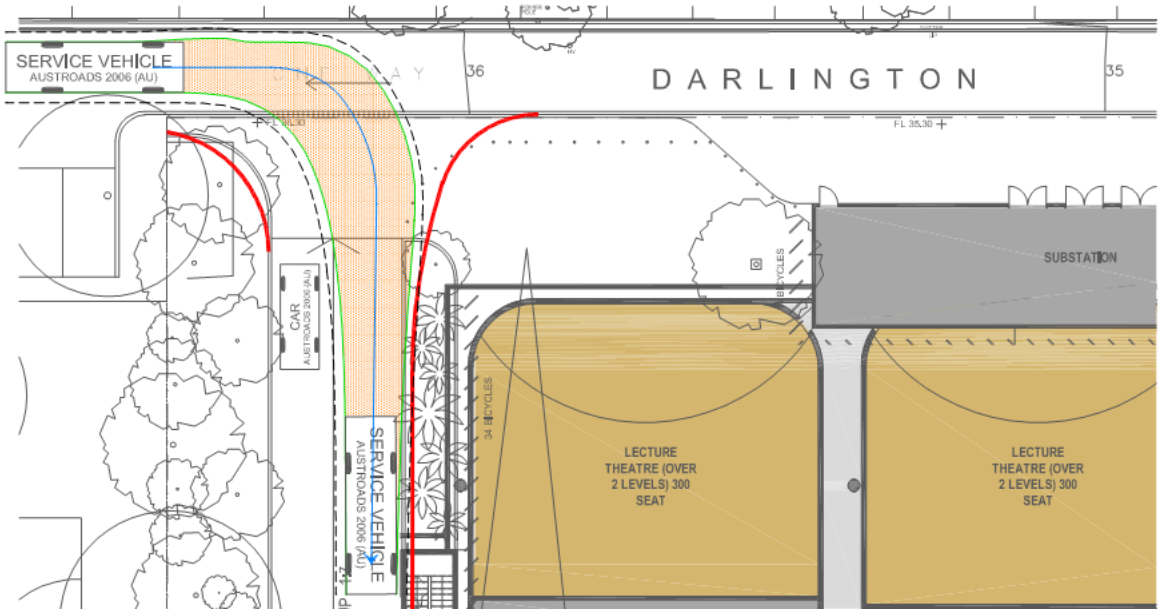
TURNING PATH ANALYSIS

SWEPTH PATH DIAGRAMS
8.8m Medium Rigid Vehicle and B99 and B85



Above: worst case simultaneous turning movement of Car & MRV

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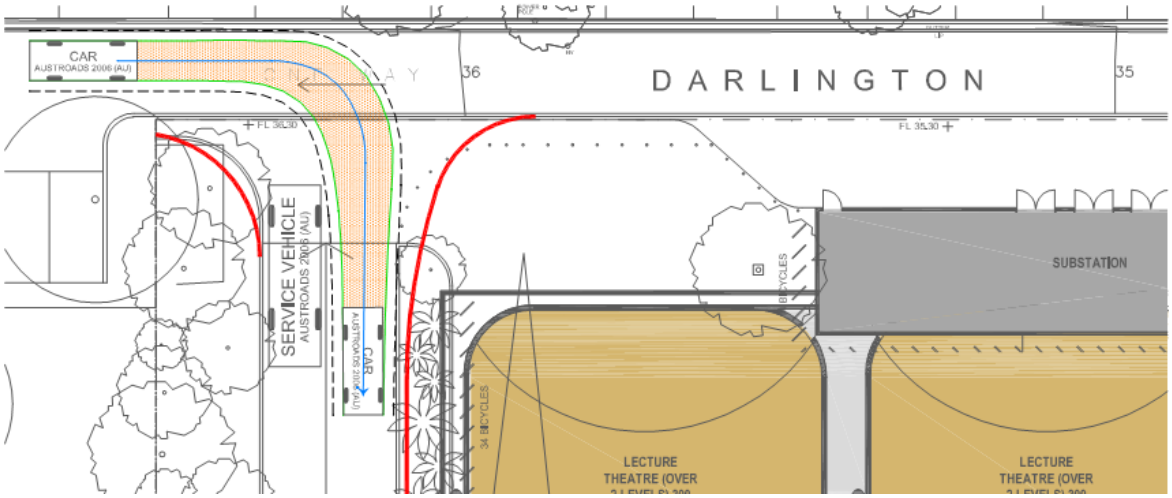
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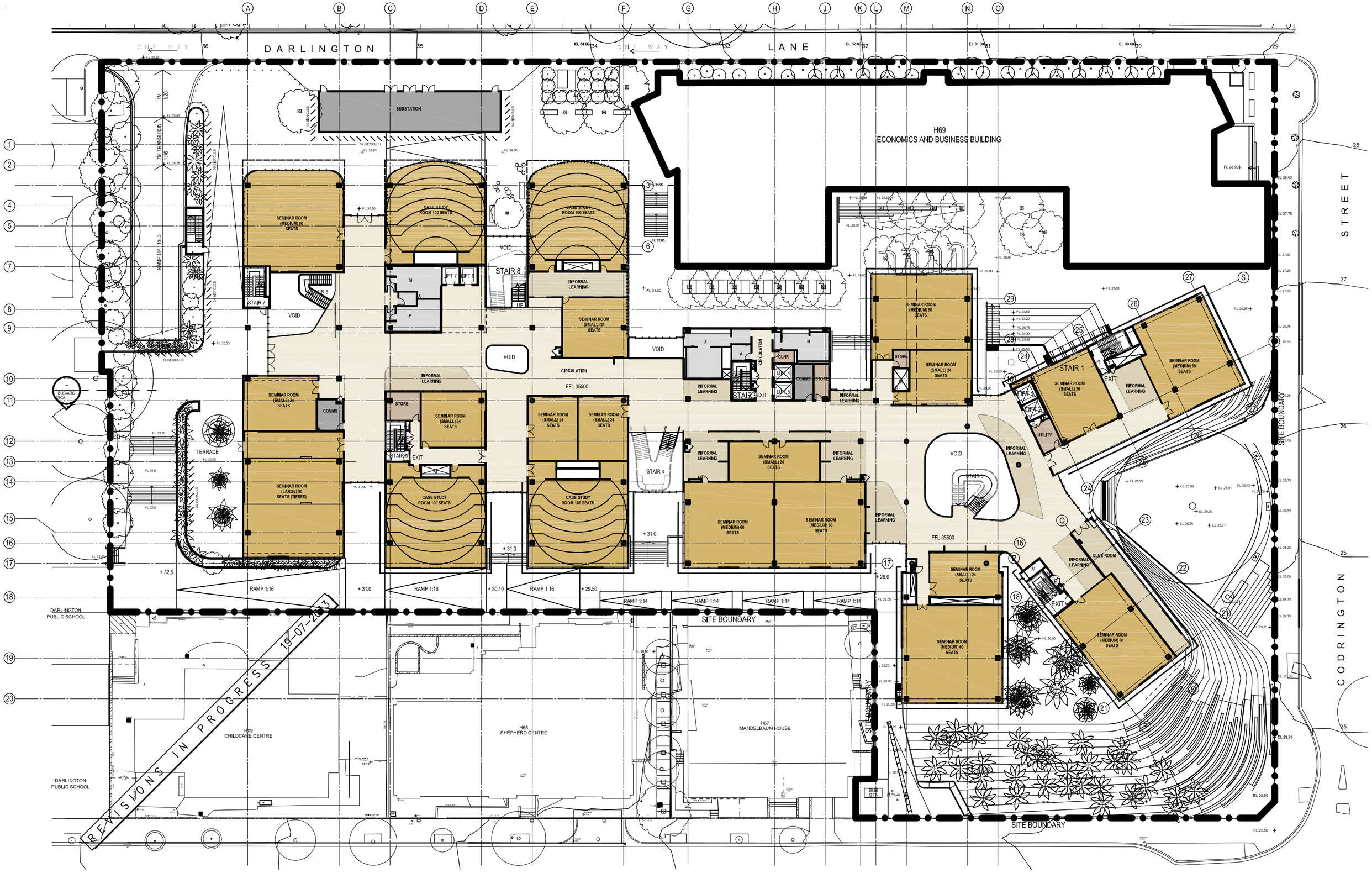
APPENDIX B:

ARCHITECT'S GROUND FLOOR PLAN: 6423 A2204 Rev C – Plan Level 1



Notes
CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK OR PREPARING WORKSHOP DRAWINGS. DO NO SCALE DRAWINGS

Client

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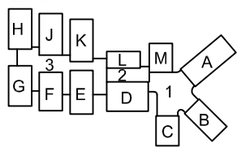
KEY PLAN



Rev	Description	Date	App'd
B	Description	XX/07/13	XX

Client
JOHN HOLLAND PTY LTD

Project
ABERCROMBIE PRECINCT REDEVELOPMENT
ABERCROMBIE PRECINCT, DARLINGTON, NSW 2008

Drawing title
PLAN
LEVEL 01

Checked: XX | Approved: XX | Scale: 1:250 @ A1 sheet size

Architects
KANNFINCH

Project number: 6423 | Drawing number: A2204 | Revision: C
Status: SECTION 75W SUBMISSION

Plot Date: 19.07.2013 5:27 PM