Appendix B Additional Traffic and Access Report

Colston Budd Hunt & Kafes Pty Ltd
as Trustee for C & B Unit Trust
ABN 27 623 918 759

Our Ref: JH\8693\jj

Transport Planning
Town Planning
Retail Studies

18 October, 2013

Parkview Penrith Pty Ltd
PO Box R1779
ROYAL EXCHANGE NSW 1225

Attention: Jenny David
Email: jenny@pview.com.au

Dear Madam,

RE: PART 3A APPLICATIONS FOR PROPOSED NEPEAN GREEN AND MASTERS MIXED USE DEVELOPMENT, 164 STATION STREET, PENRITH

1. As requested, we are writing in response to further matters by Department of Planning and Infrastructure and RMS in relation to the above development. We have previously prepared a report[1] which was submitted with the Part 3A applications.

2. In letters dated 26 August and 16 August 2013 respectively, DoPI and RMS have raised a number of traffic and parking matters. These matters, and our responses, are set out below.

DoPI

1. Traffic and Accessibility Impact assessment

a) Intersection of Ransley Street and Mulgoa Road
Ransley Street will become a major access point into the development, with the most direct access to Mulgoa Road. Intersection analysis of current and future conditions at the Ransley Street and Mulgoa Road intersection needs to be undertaken. Details of any required mitigation measures should also be considered and identified.

3. We have undertaken traffic counts at the intersection of Mulgoa Road with Ransley Street/Panthers access during weekday afternoon and Saturday peak periods. The results of the surveys are attached to this letter as Figures 1 and 2, and summarised in Table 1.

[1] Traffic and Accessibility Impact Study for Concept Plan Application for a Mixed Use Development with Stage 1 Works Involving Construction of a Masters Store, 164 Station Street, Penrith, June 2013.

Table 1: Existing two-way (sum of both directions) peak hour traffic flows			
Road	**Location**	**Weekday PM**	**Saturday**
Mulgoa Road	North of Ransley Street	2,720	3,010
	South of Ransley Street	2,575	2,760
Ransley Street	East of Mulgoa Road	310	560

4. Table 1 shows that traffic flows on Mulgoa Road were some 2,500 to 3,000 vehicles per hour two-way during the surveyed peak hours. Flows on Ransley Street were lower at some 300 to 600 vehicles per hour two-way.

5. The intersection of Mulgoa Road with Ransley Street has been analysed with SIDRA for the existing traffic flows shown in Figures 1 and 2. SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.

6. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

   - For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

   - For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

7. It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

8. The SIDRA analysis found that the intersection of Mulgoa Road with Ransley Street/Panthers access is operating with average delays of less than 30 seconds per vehicle during peak periods. This represents levels of service C, a satisfactory level of service.

9. The additional development traffic through the Mulgoa Road/Ransley Street intersection is also shown in Figures 1 and 2, and summarised in Table 2 below.

Table 2: Existing two-way peak hour traffic flows plus development traffic

Road	**Location**	**Weekday PM**		**Saturday**	
		Existing	Plus development	Existing	Plus development
Mulgoa Road	North of Ransley Street	2,720	+130	3,010	+260
	South of Ransley Street	2,575	+40	2,760	+100
Ransley Street	East of Mulgoa Road	310	+170	560	+360

10. Table 2 shows that with the proposed development, traffic increases on Ransley Street would be some 170 to 360 vehicles per hour two-way at peak times. Increases on Mulgoa Road would be lower at some 40 to 260 vehicles per hour two-way.

11. The intersection has been re-analysed with SIDRA for the additional development traffic flows shown in Figures 1 and 2. The analysis found that the intersection would operate with average delays of less than 35 seconds per vehicle during peak periods. This represents level of service C, a satisfactory level of service.

12. Therefore, the intersection will be able to cater for the additional traffic from the proposed development.

b) *Traffic/trip generation rates*

The rates that have been used to estimate traffic generation for the residential component of the proposed development and for the tavern are considered to be too

low. A generation rate of 0.4 to 0.5 trips per hour per dwelling for medium density residential flats) would be more appropriate or at the very least a rate of 0.29 vehicle trips per hour per apartment (for high density residential development within a metropolitan sub-regional centre).

Traffic generation for the tavern have been based on the previous assessment of 60 vehicle trips per hour. This now equates to approximately 1 vehicle trip per hour per 30 square metres, which is considered to be too low. This trip generation rate should be substantiated with comparisons from similar nearby land uses.

The traffic generation for the Masters store is also considered to be too low due to the adoption of an inappropriate passing trade discount of 20% (an average for new shops within existing retail centres). The 20% discount is considered too high in this case as the street frontage of Station Street is a lower order road, compared to higher order road such as Mulgoa Road (to which a 20% passing trade discount may apply). RMS guidelines suggest that the passing trade discount should not apply without adequate substantiation.

13. In relation to the traffic generation of the residential component, the traffic generation rate of 0.24 vehicles per hour per apartment is the RMS rate for high density apartments in CBD environments, such as the proposed development in Penrith CBD. It is therefore considered appropriate for the assessment of traffic implications. For the 570 apartments proposed, the difference between a traffic generation rate of 0.24 and 0.29 vehicles per hour per apartment is equal to less than 30 vehicles per hour two-way at peak times. The assessment is not sensitive to such a small difference.

14. With regards to the traffic generation of the tavern, as noted in our report submitted with the application, the previously approved tavern on the site was larger than that now proposed. The previous traffic assessment undertaken for the approved development included a traffic generation of 60 vehicles per hour two-way for the approved tavern, the same as that used by ourselves.

15. Therefore, we have assessed a higher traffic generation rate than the previously approved tavern on the site.

16. However, surveys undertaken by ourselves of a similar sized club at Ashfield (some 2,100m^2) found a peak hour traffic generation of 85 vehicles per hour two-way. This represents some one vehicle per 25m^2, a similar rate.

17. We note that the location of the site in the Penrith CBD would tend to reduce traffic generation, compared to a similar facility elsewhere.

18. In relation to the traffic generation of the Masters store, we note that:

- RMS guidelines suggest a passing trade proportion of 20 per cent for retail developments between 10,000m^2 and 20,000m^2, without distinguishing between locations;

- Station Street and Woodriff Street, as major streets providing access to and from the Penrith CBD, carry considerable traffic volumes, including considerable through traffic. They would therefore readily include passing trade; and

- while our previous report indicated an assessment which included passing trade, in practice the turning movements assessed for each intersection did not include reductions due to passing trade.

c) *Parking for the proposed tavern*

Parking provision for the tavern development needs to be reconsidered, or adequately substantiated, in light of the low parking provision proposed, compared to Council's DCP requirements. There are inconsistencies in the use of the DCP requirements in one instance (ie. basing parking requirements on surveys) and then the use of the DCP requirements in another instance by reducing the need for on-site parking (ie. DCP states that at least 60% of parking is to be provided on site or 40% can be provided off-site). If the 60% reduction is adopted, it should be used against the DCP parking provision requirement, which would be 60% of 200 spaces required, or 120 spaces. If surveys are to be relied upon, then the number of on-site spaces should be based upon surveys of similar clubs and taverns. An under-provision of parking for the proposed tavern may result in nearby on-street parking impacts.

19. As noted in our report submitted with the application, Penrith DCP 2006 includes a minimum parking requirement for pubs/registered clubs of one space per 3.5m^2 bar area plus one space per 5.5m^2 lounge/dining area.

20. By comparison, we have undertaken surveys of a number of clubs and taverns, including at Ashfield, Balgowlah, Berowra, Central Coast, Chatswood, Epping, Pennant Hills, Penrith, Redfern, Revesby, St Marys, Wentworthville and West Pennant Hills. These surveys have found parking demands in the range one space per 10 to 15m^2.

21. On this basis, the proposed 1,800m^2 tavern would require some 120 to 180 parking spaces. It would be appropriate to provide parking toward the lower end of this range, given the location of the site in the Penrith town centre, and consistent with government objectives to constrain parking and encourage alternative modes of travel in areas with good access to public transport.

22. DCP 2007 also notes that a maximum of 60 per cent of the parking spaces required by a development (apart from service vehicles, car wash bays and disabled parking) should be provided on site. The remaining spaces are subject to a contribution plan or the terms of a voluntary planning agreement.

23. On this basis, the tavern would require some 70 on-site parking spaces. It is proposed to provide some 70 spaces for the tavern in accordance with this requirement.

24. Estimates of parking demands have been based on surveys. The DCP is a policy tool to restrict the quantum of on-site parking.

25. As previously noted, the traffic generation and parking demands of the proposed tavern are likely to be lower than similar facilities elsewhere, due to its location in the town centre.

d) *Trip distribution*

While trips along the road network have been shown in Table 3.1 of the Colston Budd report, further details of trip distribution to and from each site access point are required; to clarify along which sections of the road network the traffic generated by the project is travelling.

Note: Table 3.1: Derby Street east of Woodriff Street is missing additional development traffic of +65 during the weekday afternoon and +100 during Saturday midday. This additional development traffic has been included on the traffic flow figures (Figure 2 and Figure 3) as well as the SIDRA analysis.

26. Traffic turning to and from the proposed Masters access point is shown in Figures 2 and 3 of our previous report. Traffic flows at the intersections of the new internal road with Station Street and Woodriff Street are shown in Figure 3 attached to this letter, and included in the SIDRA analysis previously provided to DoP/RMS.

e) *Traffic volumes*

Background traffic growth needs to be considered for future intersection and road network analysis, when the development is anticipated to be operational.

27. As noted in our previous report, long term strategic improvements and background traffic growth have been addressed in association with the previous broader studies[2] for the wider area, which include allowance for a larger development (in traffic generation terms) on the subject site.

[2] "Supplementary Transport Assessment for Panthers Penrith Planning Proposal". Draft report prepared for ING Real Estate Investment Management, May 2011.

28. The transport assessment for the Panthers planning proposal builds upon an earlier report prepared for the wider Riverlink Precinct. It includes consideration of a series of developments in the immediate and wider area to the year 2031. Additional infill residential development of some 4,000 dwellings was included in these assessments. At the time of preparation of those studies, the previously approved development on the subject site included 1,100 dwellings plus a series of other uses.

29. Therefore, the studies for the Riverlink Precinct and Panthers planning proposal include allowance for development on the subject site in excess of that now proposed, and include background traffic growth.

2. Loading/unloading area for the Masters store

There are a number of outstanding matters with the design of the loading/unloading area. This includes potential traffic conflicts between delivery vehicles servicing the Master store and other traffic using the proposed road (new street), apart from potential traffic conflicts in Woodriff Street. Due to the matters identified below, in particular in points (c) to (f), the current design arrangements for the loading/unloading area and deliveries to the Masters store need to be reviewed, and may not be supported. The suitability of other options should be considered, including provision of separate access to the loading/unloading area off Woodriff Street.

a) Swept paths have not been shown for the reverse loading movements on the southern side of the loading area (adjacent to the new central access road and to the rear of the trade centre).

b) The reverse movement on the northern side of the loading area appears to show vehicles encroaching outside the gate at the exit driveway, to enable reversing into the loading dock. Clarification is required as to whether this will occur, and whether this reversing movement will result in any safety issues for pedestrians in Woodriff Street which needs to be addressed.

30. The loading area on the eastern side of the Masters store has been amended. Swept paths are attached to this letter as Figures 4 and 5.

c) The swept paths diagrams should show traffic lanes on Woodriff Street as well as the proposed road (the new street) to determine whether these turn movements encroach across the centrelines of the roads.
Parking restrictions may be required along Woodriff Street, on either side of the driveway access points, to cater for the swept paths of longer vehicles turning into and out of the site, so as to avoid them crossing the Woodriff Street centreline. Also, right-turn in and left-turn in movements off Woodriff Street appear to cross over the centreline area of the proposed road (the new street), which is undesirable and sub-standard for the main loading access point.

31. The amended loading dock for Masters provides for vehicles to enter and exit on the left hand side of the road, as shown in Figures 4 and 5.

d) It is unclear how conflicts would be managed resulting from longer vehicles turning from Woodriff Street needing to wait for any vehicles exiting and turning out of the site and the proposed road.

32. Vehicles entering the Masters loading dock would not need to wait for vehicles exiting the loading dock or the proposed new access road.

e) It is unclear how vehicular access to the site is to be managed to ensure that service vehicles, in particular semi trailers up to 19m in length, only enter and exit the Masters Store loading area to and from Woodriff Street, rather than trying to access the loading area via Station Street and the central access road.

33. The Masters management arrangements for the loading dock will include entry and exit via Woodriff Street. Service vehicles could also access the loading dock from the Station Street end of the new road.

f) It is unclear how heavy vehicles (long semi trailers) entering the loading bay area from the central access road are to be managed so that they do not block other vehicles entering the proposed road, waiting to turn right.

34. The low traffic volumes on the new road, and the very low numbers of service vehicles to the Masters loading dock mean that the potential for delays to through traffic on the new road will be very low. Infrequent short delays to a small number of regular users of this road would not cause unusual issues.

RMS

1. SIDRA modelling:

RMS has checked the submitted SIDRA modeling and raises no objection to all models except the modeling of the Station Street and Ransley Street intersection in the "EX Sat mid + dev" scenario. Some of the priority settings are incorrect which have critical implications for the movement delay calculations at the junction including its Level of Service (LOS) and Degree of Saturation (DOS). Once corrected, RMS found the LOS to be "E" and DOE to be 1.071. This indicates that the intersection will not perform satisfactorily under the proposed scenario.

35. Following discussions with RMS, we understand that this matter relates to gap acceptances for a sign controlled intersection. We agree that the intersection of Station Street with Ransley Street would not work appropriately with the proposed development under sign control. Traffic signals are therefore proposed at the intersection.

2. Warrants for Signalisation:

In RMS's response to the Department dated 4 July 2013, RMS requested that the proponent demonstrate that the Warrants for Signalisation were met for the proposed traffic signals at the Ransley Street and Station Street intersection, particularly for "each of four one-hour periods of an average day". The revised traffic information has included surveys of the Ransley Street and Station Street intersection on a Friday and Saturday.

Point 9 in Colston Budd Hunt and Kafes response to matters raised by RMS, states:

"Therefore, based on the Saturday traffic flows, the RMS traffic demand warrant for signalising the intersection is effectively met. For other times of the week, the warrant would not be met."

RMS does not support the signalisation of the Ransley and Station Street intersection at this time as the warrant for signalisation, (which requires that the traffic demand is for four, one-hourly periods on an average *day), has not been met. RMS's interpretation of an average day is that of a Tuesday or Wednesday outside of school holiday periods or days with abnormal traffic demand, and not a Friday or Saturday.*

3. Options for access control:

Point 9 in Colston Budd Hunt and Kafes response states:

"Analysis with SIDRA indicates that sign controls would not have the capacity to cater for traffic flows through the intersection. A roundabout would not be practicable as it cannot be provided within the available space."

RMS requests that the applicant justifies the above statement by submitting the analysis which was carried out for the alternative options, particularly for the roundabout option.

36. In relation to the warrants for traffic signals, we have had a meeting with RMS and understand that RMS is reviewing its interpretation of an 'average' day.

37. With regards to the potential for a roundabout at the intersection, copies of a concept drawing for a roundabout at the access point are attached to this letter. As shown in the drawing, there is not space available in Station Street to provide the deflection required on the Station Street approaches, and appropriately accommodate turning vehicles.

38. As also noted in our previous letter of 26 July, a roundabout would also not cater as well for pedestrians at the intersection, compared to traffic signals.

39. As noted above in paragraph 35, we agree with RMS that the intersection would not operate satisfactorily under sign control.

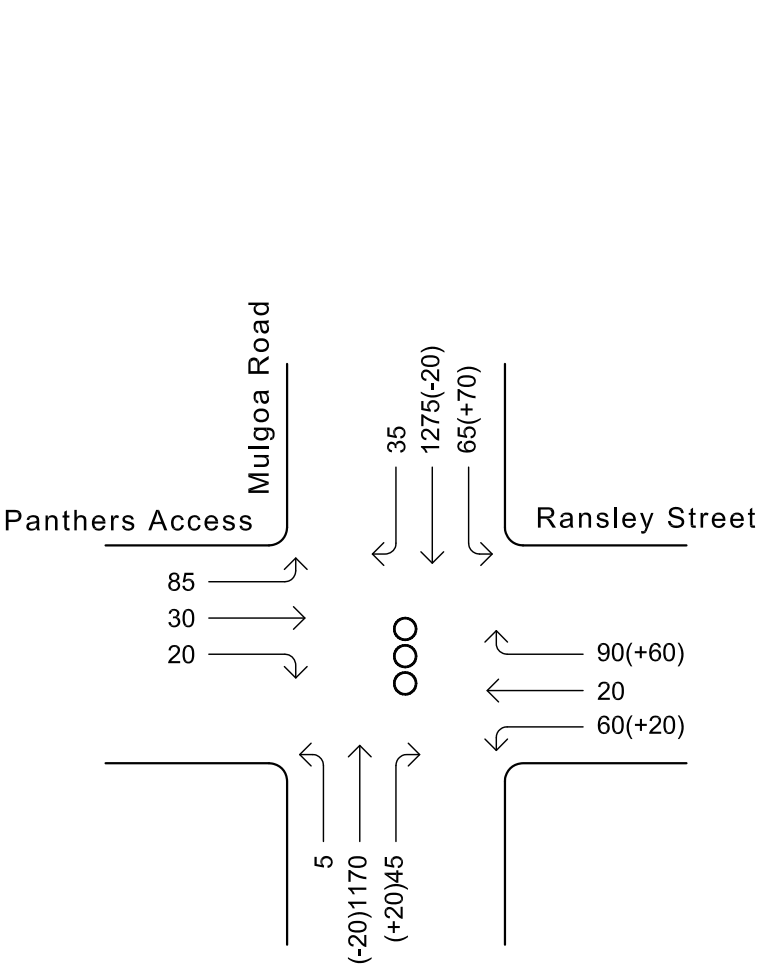
40. Therefore, as noted in our previous letter of 26 July, traffic signals would be the most appropriate form of control for the intersection, because:

- a sign controlled intersection would not have adequate capacity;
- a roundabout would not be practicable, and would not cater well for pedestrians; and
- the warrants for traffic signals are effectively met at the intersection.

41. We trust the above provides the information you require. Finally, if you have any queries please do not hesitate to contact us.

Yours faithfully,
COLSTON BUDD HUNT & KAFES PTY LTD

J Hollis
Director



LEGEND

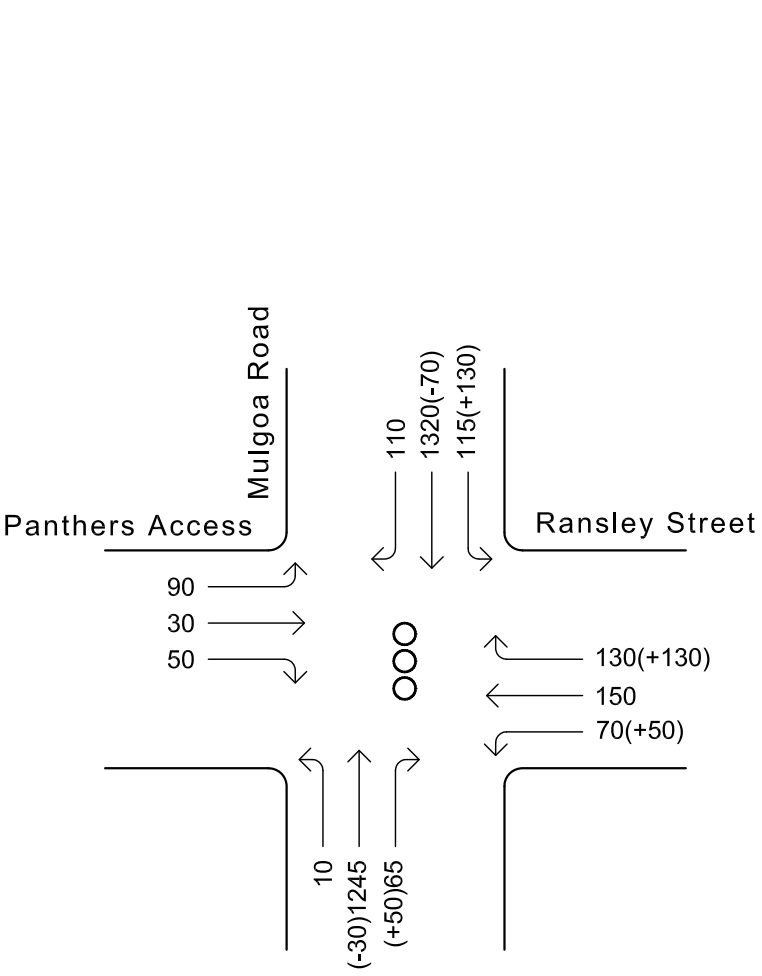
100 - Existing Peak Hour Traffic Flows
(+10) - Additional Development Traffic
- Traffic Signals

Existing weekday afternoon peak hour traffic flows plus development traffic

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_hs Ref: 8693 16 October 2013

Figure 1



LEGEND

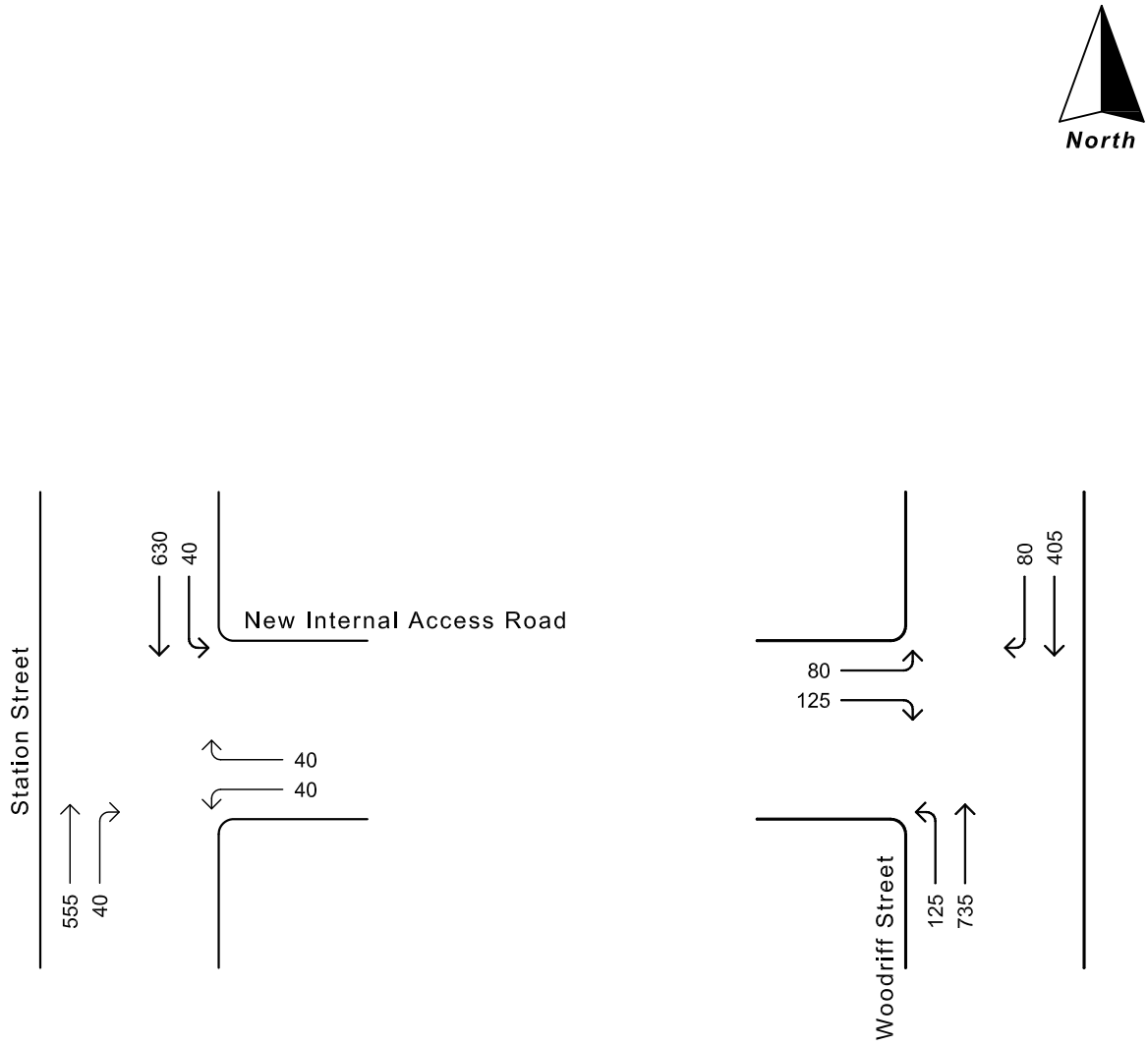
100 - Existing Peak Hour Traffic Flows
(+10) - Additional Development Traffic
- Traffic Signals

Existing Saturday Midday peak hour traffic flows plus development traffic

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_hs Ref: 8693 16 October 2013

Figure 2



LEGEND

100 - Existing Saturday Peak Hour Traffic Flows plus Development Traffic

Traffic flows at intersections of new internal access road with Station Street and Woodriff Street

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_hs Ref: 8693 16 October 2013

Figure 3

PROPOSED ROAD

WOODRIFF STREET

PROPOSED ROAD

WOODRIFF STREET

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

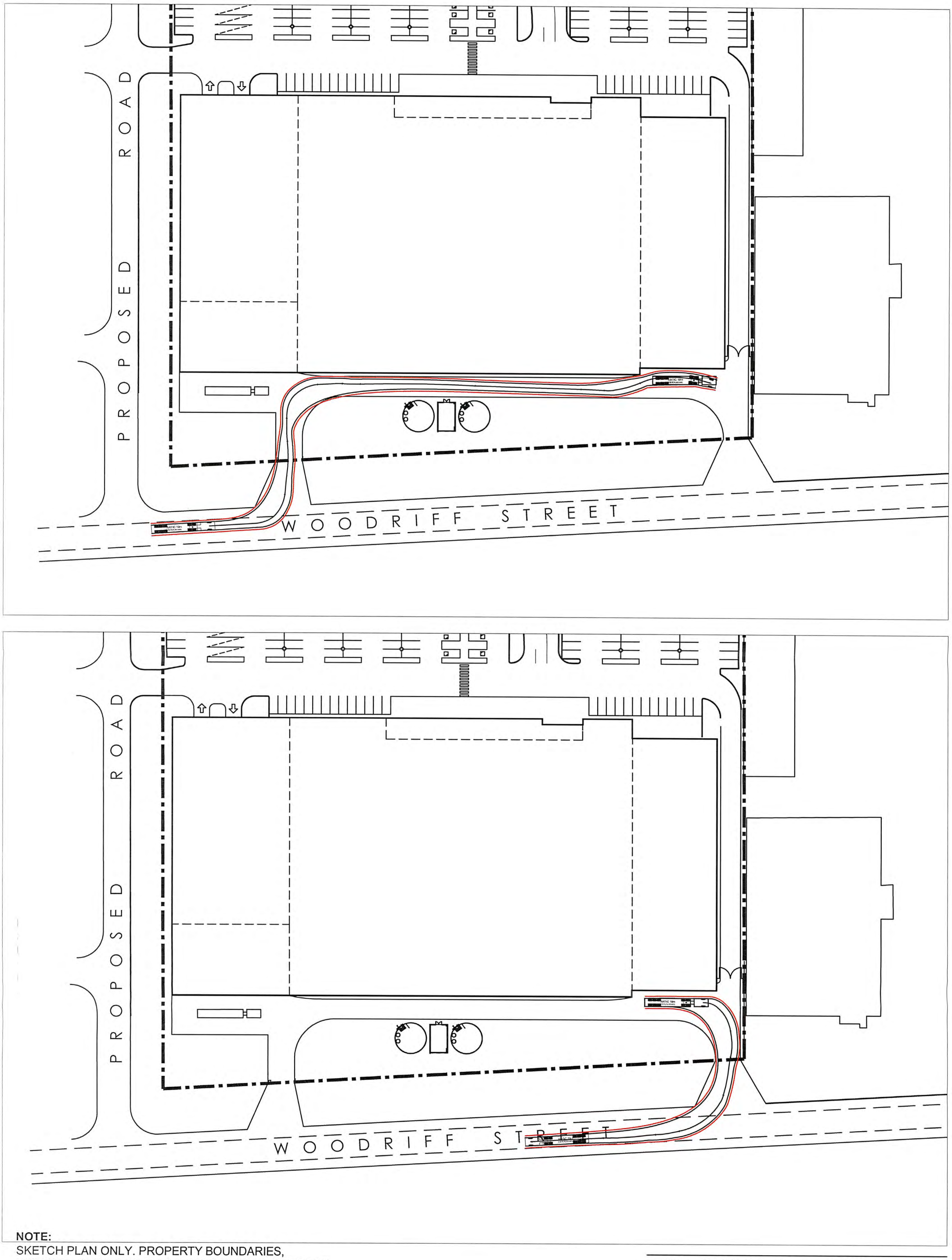
Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

19m ARTICULATED TRUCK SWEPT PATHS

DRAWN BY CBHK Pty Ltd_ Ref: 8693_ds

16th OCTOBER 2013

4



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

19m ARTICULATED TRUCK SWEPT PATHS

DRAWN BY CBHK Pty Ltd_ Ref: 8693_ds 16th OCTOBER 2013

NOTE:
1. The intersection layout as shown on this plan is for discussion purposes only and is not to be used for pricing for construction.
2. The assumed design vehicle used to design the layout of this roundabout is a HRV (Heavy Rigid Vehicle).
3. The radius of the central island used is 8m. This is based on the minimum allowable for a 50km/h street as specified in the Austroads guide for roundabouts

EXISTING BUS STOP FURTHER WEST ON STATION ST TO BE UNAFFECTED BY PROPOSED INTERSECTION WORKS

EXISTING BUS ZONE LIKELY TO BE RELOCATED

CONSTRUCT NEW KERB AND GUTTER TO SUIT

EXISTING KERB AND GUTTER TO REMAIN IN USE

TAPER TO SINGLE LANE

ADJOINS INSERT A

NEW KERB AND GUTTER TO BE CONSTRUCTED ALONG FRONTAGE OF PROPERTY AT WIDENED EXTENTS SHOWN

STORMWATER TO BE RELOCATED TO SUIT NEW KERB LINE

NEW KERB AND GUTTER TO BE CONSTRUCTED ALONG FRONTAGE OF PROPERTY AT WIDENED EXTENTS SHOWN

BOUNDARY ADJUSTMENT REQUIRED ALONG FRONTAGE OF PROPERTY

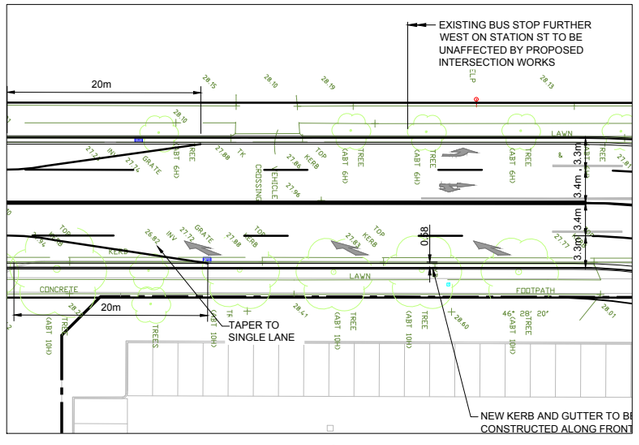
SERVICE ADJUSTMENTS LIKELY REQUIRED TO SUIT NEW ROAD LEVEL

LIGHT AND POWER POLE TO BE RELOCATED

LIGHT AND POWER POLE TO BE RELOCATED

TREES TO BE REMOVED ALONG FRONTAGE DUE TO PROXIMITY WITH NEW KERB LINE

3.5m Verge | 3.3m | 3.4m | 3.4m | 3.5m Verge



INSERT A

Preliminary - Not for Construction

Notes

2 0 5 10 20
PLAN SCALE 1:300 @ A1

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	06.09.13	RP	Issued for information	-	-

Mott MacDonald
Level 3, 90 Phillip Street
Parramatta, NSW 2150
Australia
PO Box 163, Parramatta
NSW 2124, Australia
T +61 (0)2 9891 5044
F +61 (0)2 9891 5386
W www.mottmac.com.au

Client

PARKVIEW
CONSTRUCTIONS • DEVELOPMENTS • PROJECTS • INTERIORS

Title

Nepean Green Penrith
Infrastructure Sketch
Concept Intersection Design
Station Street and Ransley Road
Roundabout Option

Designed	G.Collins	.	Eng check	C. Avis	.
Drawn	G. Collins	.	Coordination	D. Reilly	.
Dwg check	D. Reilly	.	Approved	X	.

Scale at A1	Status	Rev
1:300	PRE	P1

Drawing Number
MMD-310574-C-SK-PV-XX-0220

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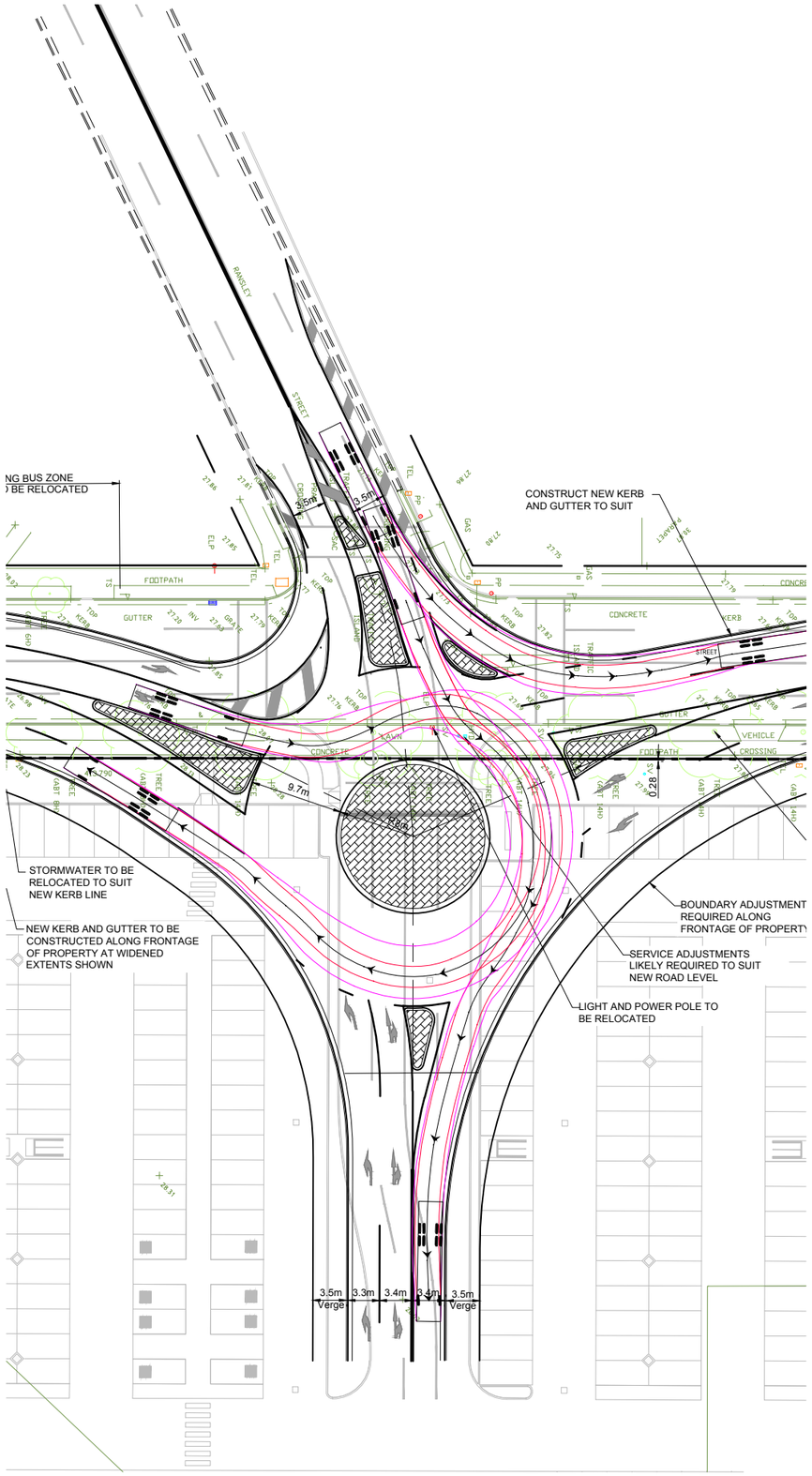

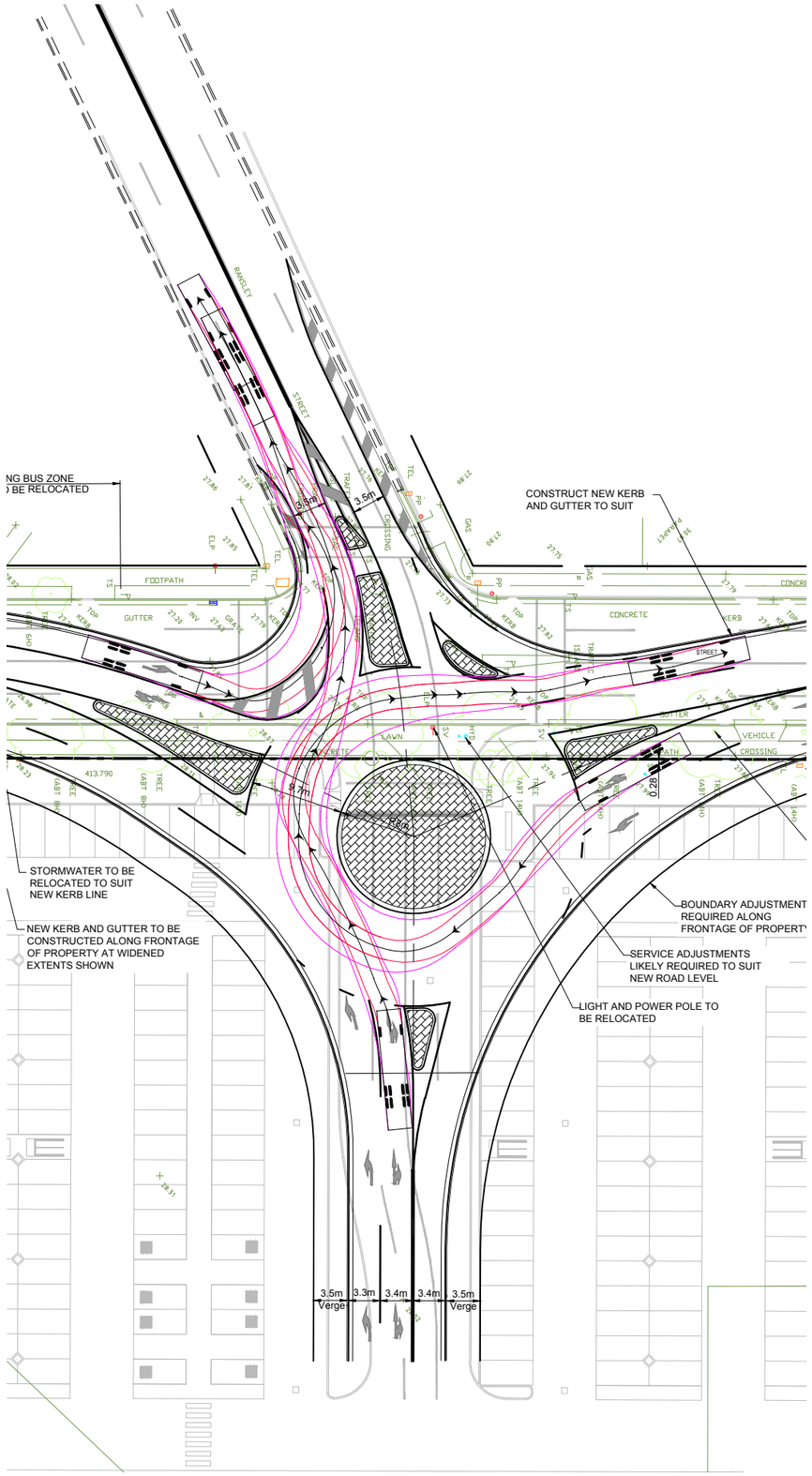

Preliminary - Not for Construction

Notes

2 0 5 10 20
PLAN SCALE 1:300 @ A1

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Mott MacDonald
Level 3, 90 Phillip Street
Parramatta, NSW 2150
Australia
PO Box 163, Parramatta
NSW 2124, Australia
T +61 (0)2 9891 5044
F +61 (0)2 9891 5386
W www.mottmac.com.au

Client
PARKVIEW
CONSTRUCTIONS · DEVELOPMENTS · PROJECTS · INTERIORS

Title
Nepean Green Penrith
Infrastructure Sketch
Concept Intersection Design
Station Street and Ransley Road
Roundabout Option

Designed	G.Collins	.	Eng check	C. Avis	.
Drawn	G. Collins	.	Coordination	D. Reilly	.
Dwg check	D. Reilly	.	Approved	X	.

Scale at A1	Status	Rev
1:300	PRE	P1

Drawing Number
MMD-310574-C-SK-PV-XX-0221