Transport for NSW

16 August 2023

TfNSW Reference: SYD23/00324/02
Council's Reference: DA 9876 MOD 1
Planning Portal Reference: CNR-52322

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REMOVAL OF A LEFT TURN LANE ON CASTLEREAGH ROAD AT LUGARD STREET

Dear Chris,

Reference is made to the additional information provided by the applicant dated 1 June 2023, and the meeting held on 3 July 2023 regarding the abovementioned modification application which was referred to Transport for NSW (TfNSW) for assessment in accordance with clause 2.122 of the State Environmental Planning Policy (Transport and Infrastructure) 2021.

TfNSW has reviewed the submitted information including the traffic modelling and provides detailed comments in **TAB A.**

TfNSW notes that the development will significantly increase the volume of traffic turning left into Lugard Street from Castlereagh Road;

- from 54 vehicles per hour to 607 vehicles per hour in the AM peak hour which represents a 1024% increase, and
- from 19 vehicles per hour to 110 vehicles per hour in the PM peak hour which represents a 479% increase.

Considering the intensification of the left turn traffic volume into Lugard Street from Castlereagh Road, TfNSW reiterates the previous advice that TfNSW does not support the modification to remove development consent condition 23(b) which requires the developer to provide the left turn lane from Castlereagh Road into Lugard Street as the proposed road works are considered warranted and necessary to mitigate the impact on traffic flow and queuing in Castlereagh Road.

Furthermore, TfNSW has reviewed the existing intersection layout and notes that a left turn lane could be provided within the existing road reserve by reconstructing the central median, and reallocation of lane space between the kerbs of Castlereagh Road to allow the lateral shift of all lanes on both the approach and departure side of the intersection.

For more information of further details regarding the design requirements of the left turn lane, please contact Nav Prasad, Land Use Planner via email at development.sydney@transport.nsw.gov.au.

Yours sincerely,

David Rohloff
Senior Manager, Land Use Assessment West and Central
Planning and Programs Greater Sydney

TAB A

TfNSW has reviewed the submitted traffic report and traffic modelling and provides the following comments.

Traffic Distribution

- There are only two access points into the development:
    - Access 1 - Lugard Street via the traffic signal controlled intersection at Castlereagh Road and,
    - Access 2 - Old Castlereagh Road via roundabout controlled intersection at Andrews Road/Old Castlereagh Road/Castlereagh Road.
- The traffic report indicates that the traffic distribution for the development will be as shown in the table below.

TABLE 2: TRAFFIC DISTRIBUTION

Peak Hour	Direction	North Approach Castlereagh Rd		South Approach Castlereagh Rd		West Approach Lugard St	
		Right Turn	Through	Through	Left Turn	Right Turn	Left Turn
AM	IN	5%		0%	30%		
	OUT		0%			30%	5%
PM	IN	5%		0%	30%		
	OUT		0%			30%	5%

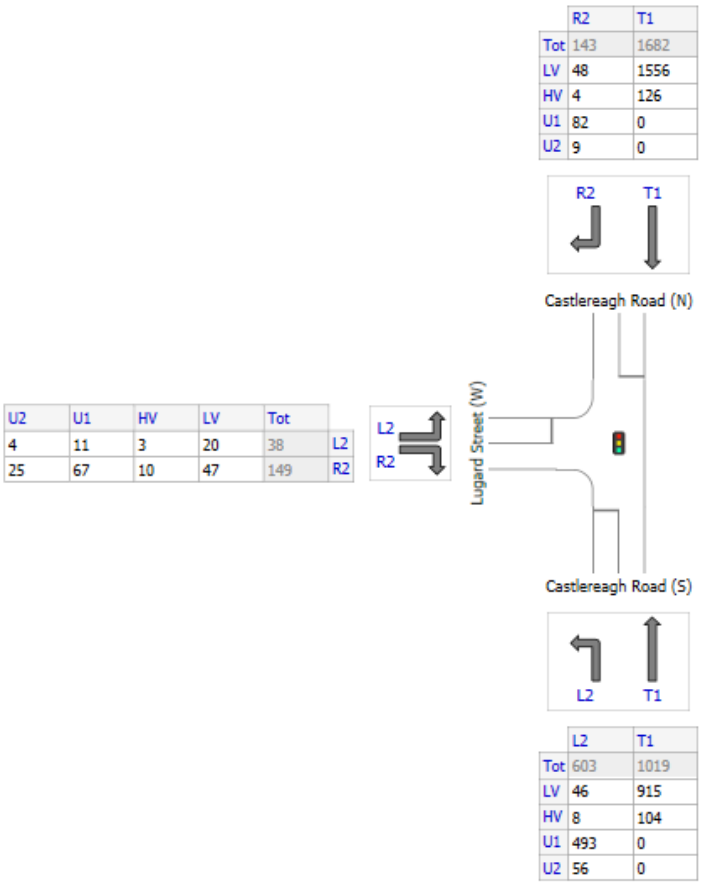
- Considering the location of the site in relation to the layout of the road network and the available routes that traffic would use to access the development, TfNSW disagree with the traffic distribution provided in the analysis and is of the opinion that 50 to 70% of development traffic would use Castlereagh Road from the south because:
    - Castlereagh Road/Mulgoa Road provides the main direct state road connection from the M4 Motorway and is the most likely route that would be used by traffic originating from area to the east, south and west of the site.
    - Andrews Road is a regional road with a single lane in each direction and only likely to be used by traffic originating from residential areas immediately to the east or north of the site.
    - It is unlikely that 5% of development traffic would continue southbound through the roundabout from Castlereagh Road and then turn right into Lugard Street to access the development and more likely that traffic would turn right to access the development directly from Access Point 2 in Old Castlereagh Road.

Traffic Generation

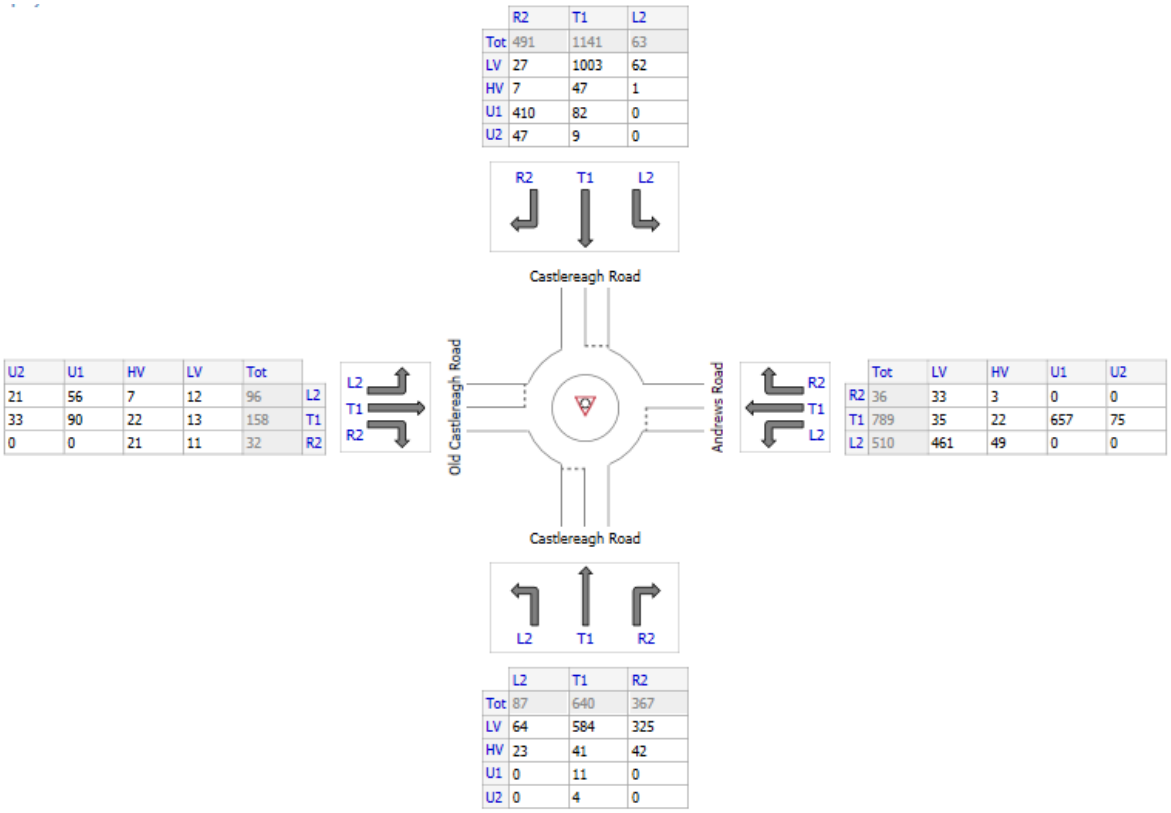
- TfNSW agrees with DPE's comments that the traffic impact assessment of the modification should use the land use percentage spilt and GFA spilt recommended in the GHD report, and the traffic generation results shown in the following table.

Precinct ID	Indicative Land Use	AM peak hour period Trip Generation			PM peak hour period Trip Generation			Weekend Peak hour period Trip Generation			Zoning / Use Status	Assumptions and Source
		In	Out	Total	In	Out	Total	In	Out	Total		
Employment Land	Industrial	749	187	**936**	202	807	**1,008**	0	0	**0**	Zoned land Likely use known	GFA is 55% of total land area, based on an economic report by the developer of the employment land detailing the likely development of the site 80% of the Area is industrial uses and 20% of the Area is office GFA were provided by DPIE: 75,000m2 for office and 180,000 for industrial Business parks and industrial estates peak hour trip generation rates for AM (0.52) and PM (0.56) from Page 2 in RMS TDT2013/04a Office blocks peak hour trip generation rates for AM (1.6) and PM (1.2) from Page 2 in RMS TDT2013/04a Assume no weekend trips due to land use type *Important note: previously DPE advised a 70% and 30% split of industrial and office. In the current revision supplied to GHD it was updated to 80% and 20%, hence updating total trips.*
	Office	1,080	120	**1,200**	90	810	**900**	0	0	**0**		
	Total	1,829	307	**2,136**	292	1,617	**1,908**	0	0	**0**		

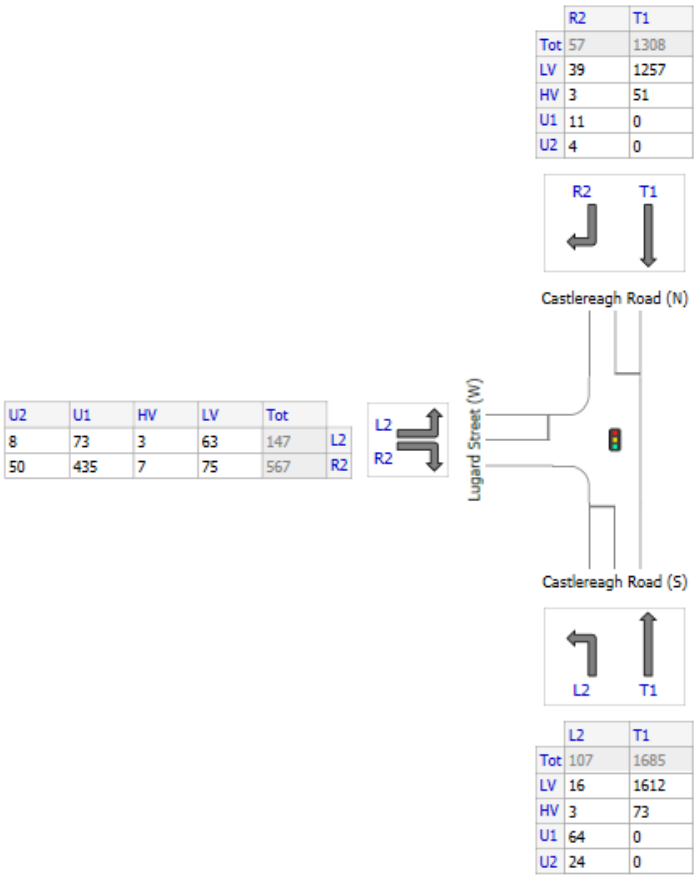
- From the table above the proposed development will generate:
  - 1829 inbound and 307 outbound vehicle trips in the AM peak hour and,
  - 292 inbound and 1617 outbound vehicle trips in the PM peak hour.
- The post development traffic volumes for the traffic signal controlled intersection at Lugard Street/Castlereagh Road and the roundabout controlled intersection at Andrews Road/Old Castlereagh Road/Castlereagh Road Andrews are shown in the following figures for the AM and PM peak periods.



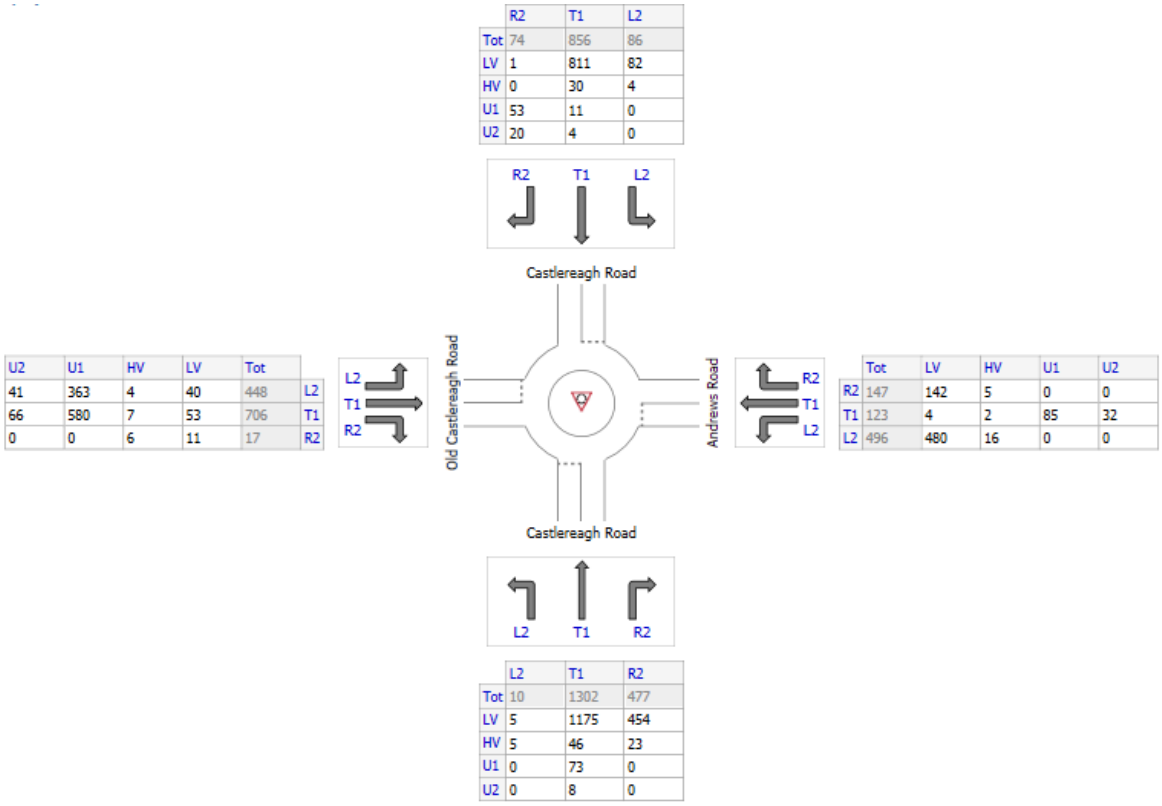
AM Peak - Lugard Street/Castlereagh Road



AM Peak - Andrews Road/Old Castlereagh Road/Castlereagh Road



PM Peak - Lugard Street/Castlereagh Road



PM Peak - Andrews Road/Old Castlereagh Road/Castlereagh Road

- Analysis of the traffic generation distribution to the two intersections is provided in the table below.

AM Peak Development Inbound Traffic Distribution					
Access Point	Movement	Volume		Total	
		Cars	Trucks	Number	%
Access Point 1	LT into Lugard Street from Castlereagh Road	493	56	549	30
	RT into Lugard Street from Castlereagh Road	82	9	91	5
Access Point 2	Through movement from Andrews Road into Old Castlereagh Road	657	75	732	40
	RT from Castlereagh Road into Old Castlereagh Road	410	47	457	25
Total		1642	187	1829	100

PM Peak Development Outbound Traffic Distribution					
Access Point	Movement	Volume		Total	
		Cars	Trucks	Number	%
Access Point 1	LT from Lugard Street into Castlereagh Road	73	8	81	5
	RT from Lugard Street into Castlereagh Road	435	50	485	30
Access Point 2	LT from Old Castlereagh Road into Castlereagh Road	363	41	404	25
	Through movement from Old Castlereagh Road into Andrews Road	580	66	646	40
Total		1451	165	1616	100

Traffic Impact on Road Network

- The impact of the traffic generated on the road network is significant and will lead to extensive queuing and congestion of Castlereagh Road at both Lugard Street and the roundabout at Andrews Road/Old Castlereagh Road/Castlereagh Road in both the AM and PM peak periods and evident in the traffic model results.
- Table 4 in the traffic report (extract in the figure below) shows the future left tune traffic demand (based on the traffic modelling and a distribution that 30% of inbound trips and existing trips would turn left into Lugard Street) indicates that 607 vehicles in the AM peak hour and 110 vehicles in the PM peak hour would turn left at Lugard Street.

TABLE 4: INTERSECTION PERFORMANCE – LEFT TURN FROM SOUTH ONLY

Case	AM			PM		
	Left Turn Demand (veh)	Left Turn Delay (s)	Left Turn Queue (m)(1)	Left Turn Demand (veh)	Left Turn Delay (s)	Left Turn Queue (m)(1)
GHD Volumes – No LT Lane	607	6.4	84.6	110	6.1	136.1
GHD Volumes – LT Lane	607	6.2	22.4	110	8.1	8.6
TTPA Volumes – No LT Lane	191	6.2	76.8	94	6.1	130.8
TTPA Volumes – LT Lane	191	6.1	5.1	94	8.1	7.3

Notes:

(1) Where no left turn lane is provided, the queue expressed is for the kerbside lane which serves both left turn and through movements.

- The impact of queuing of not providing the left turn as conditioned from Castlereagh Road into Lugard Street is significant with queues of 84.6m in the AM peak and 136.1m in the PM peak. Once again it is important to note that this is based on trip distribution of 30% of development traffic turning left which TfNSW do not agree with. The queuing is likely to be much higher should more traffic be distributed to turn left into Lugard Street.
- The provision of the left turn lane as conditioned from Castlereagh Road into Lugard Street would reduce the AM peak hour queue for the left turn to 22.4m in the AM peak which represents a 74% reduction in queue length. Similarly, the PM peak hour queue for the left turn is reduced to 8.6m which represents a 94% reduction. This is due to the traffic signal phasing which allows the left turn movement to be given a green signal when Lugard Street is given a green signal.
- After review of the model, it is noted that the right turn into Lugard Street from Castlereagh Road is also significantly impacted by the traffic generated by the development with queues of 179.5m in the AM peak which indicates it queues out of the right turn bay significantly and would impact traffic flow in the southbound direction of Castlereagh Road. This results from distributing 5% of the development traffic to turn right to enter the development from Lugard Street. As previously indicated TfNSW do not agree that 5% of traffic would turn right into Lugard Street from Castlereagh Road.
- It is noted that Andrews Road is a regional road with a single lane in each direction and provides residential access to Cranbrook. The existing traffic volumes in Andrews Road are 623 vehicles in the AM peak and 704 vehicles in the PM peak. The distribution of the traffic generated by the development adds 732 vehicles to the existing traffic volume in the AM peak to a total of 1355 vehicles and 646 vehicles in the PM peak to a total of 1350 vehicles.
- It is important to note that an assessment of the roundabout at Andrews Road/Old Castlereagh Road/Castlereagh Road has not been provided in the report to determine the impact of operation of the roundabout.
- The review of the model indicates that the roundabout performance is severely impacted and reduces from a level of service A to a level of service F in both the AM and PM peak hours. Of primary concern is the queuing in each of the side roads. The results are summarised in the tables below.

Roundabout Model Results - AM Peak			
Approach	Queue Length		Average delay
	Existing (m)	Post Development (m)	
Castlereagh Road (south)	20.1	351.1	97s increase
Andrews Road (east)	30.1	1517.3	487s increase
Castlereagh Road (north)	26.4	148.3	15.7s increase
Old Castlereagh Road (west)	3.7	14.0	4.5s decrease

Roundabout Model Results - PM Peak			
Approach	Queue Length		Average delay
	Existing (m)	Post Development (m)	
Castlereagh Road (south)	5.5	94.7	5.3s increase
Andrews Road (east)	8.4	33	0.9s increase
Castlereagh Road (north)	6.5	166.7	38.8s increase
Old Castlereagh Road (west)	11.7	1202.8	415.3s increase

- It is important to note that Andrews Road is a bus corridor, and the impact of the development will lead to an 8 minute delay to buses as well as general traffic in the AM peak approaching the roundabout.
- It is also important to note that the 1202.8m queue in Old Castlereagh Road extends to the access road into the development which means that it is difficult to even enter Old Castlereagh Road in the PM peak hour.
- The review of the model also shows that the approach lanes in Lugard Street are modelled as two lanes, 500m long which is incorrect as kerb side parking is permitted in Lugard Street on approach to Castlereagh Road with only the last 20m signposted as 'No Stopping'. This means that the modelling results for the Lugard Street in terms of delays and queue lengths are also incorrect.