
From: TPC Enquiry
To: TPC Enquiry
Subject: FW: Clarence- draft amendment PDPSAMEND-2025-054641- Joint traffic submission
Attachments: Clarifying operational issues - East Derwent Highway.pdf

Dear Paola

Please find attached supplementary statement from Mr Hubble in response to the Commission's directions.

Yours faithfully

Naomi Billett
Principal

BILLETTLEGAL



naomi@billettlegal.com.au

PO Box 29, North Hobart, Tas 7002
www.billettlegal.com.au

Traffic analysis clarifying
operational issues on the East
Derwent Highway between
Ballawinnie Rd and Nietta Rd,
Lindisfarne



Hubble Traffic

July 2026

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1. Introduction

This traffic analysis has been undertaken to clarify current operational performance of the East Derwent Highway in the vicinity of Ballawinnie Road and Nietta Road, drawing on both Department of State Growth traffic data and manual survey information. The assessment has been prepared in response to the proposed rezoning of 113–119 East Derwent Highway from residential to commercial use.

The intent of this analysis to identify any existing operational issues and to quantify the level of turning-movement risk using the Austroads turning-treatment methodology, which provides a structured tool for determining whether dedicated turning treatments should be investigated. The methodology evaluates the relationship between turning volumes and opposing or following traffic flows, allowing the operational risk at the access to be expressed in measurable terms.

The same turning-risk methodology can be applied to the proposed development site to assess whether a future commercial activity may influence turning demand and conflict exposure.

The analysis also outlines practical mitigations that could improve current operation performance and provide resilience against future increases in traffic activity.

Consideration of funding pathways for any mitigation works is outside the scope of this technical assessment.

2. The traffic flows on East Derwent Highway

To understand the traffic flows on East Derwent Highway past this site, State Growth traffic database was used, with the nearest dataset available to the site being 120 metres north of Nietta Road, with the dataset being a temporary station recording vehicles for one week in November 2024.

Although both Midson Traffic and Hubble Traffic used the same database, the discrepancy is AADT (Average Annual Daily Traffic) versus weekday traffic flow.

The extract below shows the traffic flow data for November 2024. Indicating that 22,000 weekday vehicles were recorded using the highway during the week of 25 to 29 November 2024.

Extract 2.0A – State Growth traffic database

Site Name A0029130 Site ID 0000A0029130 Description East Derwent Highway 120m N Of Nietta Rd							
All Lanes ▼	Time Period: 1 hour ▼		Class: Any ▼		Exclude data: None ▼		
	Mon 25 Nov	Tue 26 Nov	Wed 27 Nov	Thu 28 Nov	Fri 29 Nov	Average Workday 7 Day	Total Count
00:00	44	37	54	55	68	52	258
01:00	34	34	39	42	34	37	183
02:00	21	29	13	27	23	23	113
03:00	36	34	22	26	31	30	149
04:00	94	84	87	88	78	86	431
05:00	301	310	309	303	270	299	1493
06:00	857	911	903	870	812	871	4353
07:00	1568	1653	1629	1516	1584	1590	7950
08:00	1827	1859	1987	1854	1884	1882	9411
09:00	1184	1291	1306	1270	1383	1287	6434
10:00	1126	1127	1209	1192	1374	1206	6028
11:00	1159	1274	1190	1212	1362	1239	6197
12:00	1235	1193	1214	1279	1355	1255	6276
13:00	1166	1246	1292	1288	1450	1288	6442
14:00	1387	1616	1654	1620	1618	1579	7895
15:00	1917	1947	1862	2022	2036	1957	9784
16:00	2018	2119	2088	2094	1994	2063	10313
17:00	1748	1877	1753	1841	1750	1794	8969
18:00	974	1144	1137	1168	1204	1125	5627
19:00	645	768	731	751	773	734	3668
20:00	469	570	548	563	633	557	2783
21:00	328	421	622	448	551	474	2370
22:00	212	238	275	255	369	270	1349
23:00	99	115	98	125	281	144	718
07-19	17309	18346	18321	18356	18994	18265	91326
06-22	19608	21016	21125	20988	21763	20900	104500
06-24	19919	21369	21498	21368	22413	21313	106567
00-24	20449	21897	22022	21909	22917	21839	109194
am Peak	08:00	08:00	08:00	08:00	08:00	08:00	-
Peak Volume	1827	1859	1987	1854	1884	1882	-
pm Peak	16:00	16:00	16:00	16:00	15:00	16:00	-
Peak Volume	2018	2119	2088	2094	2036	2063	-

The November 2024 dataset includes average hourly lane flows, which is useful when determining turning risk. In the afternoon period 4 to 6pm, the northbound flows passing the Ballawinnie Road is around 600 vehicle per lane, as illustrated in the extract.

Extract 2.0B – State Growth traffic databased – average weekday hourly flows

Site Name A0029130 Site ID 0000A0029130 Description East Derwent Highway 120m N Of Nietta Rd					
Exclude data: None ▼					
	Northbound Left Lane	Northbound Right Lane	Southbound Right Lane	Southbound Left Lane	Total
00:00	20	10	12	12	54
01:00	13	6	9	9	37
02:00	6	6	5	7	23
03:00	4	4	7	14	28
04:00	21	5	26	33	84
05:00	66	26	111	95	298
06:00	200	123	318	234	874
07:00	316	211	706	362	1596
08:00	352	258	836	450	1896
09:00	366	240	436	271	1312
10:00	352	238	378	257	1226
11:00	365	255	383	256	1260
12:00	381	266	363	250	1260
13:00	393	303	364	258	1319
14:00	456	372	481	318	1627
15:00	577	534	536	320	1967
16:00	588	598	564	324	2074
17:00	538	530	455	282	1805
18:00	342	291	312	217	1163
19:00	228	176	189	163	756
20:00	193	149	114	122	578
21:00	162	124	109	116	510
22:00	92	79	54	59	284
23:00	54	34	34	33	155
07-19	5025	4096	5815	3568	18504
06-22	5808	4667	6545	4203	21223
06-24	5954	4781	6634	4294	21662
00-24	6082	4837	6802	4465	22186
am Peak	09:00	08:00	08:00	08:00	08:00
Peak Volume	366	258	836	450	1896
pm Peak	16:00	16:00	16:00	16:00	16:00
Peak Volume	588	598	564	324	2074

3. Existing junctions - turning risks

Austrroads Guide to Traffic Management Part 6, Section 3.3.6 provides a risk-based framework for assessing turning movements against major-road traffic volumes. The methodology plots turning demand against through-traffic flows to indicate when the combination of slowing or stationary turning vehicles and background traffic creates elevated conflict exposure.

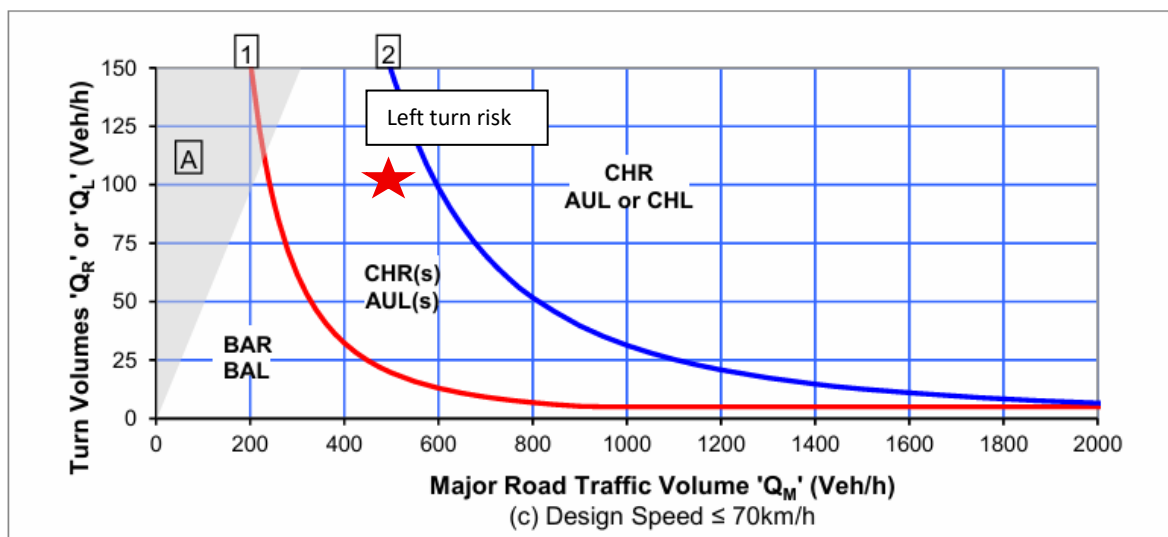
This graph-based approach is a useful tool for quantifying turning-movement risk and identifying circumstances where investigation of dedicated treatments, such as auxiliary left-turn lanes or right-turn facilities, may be warranted to separate turning vehicles from the through-traffic stream.

3.1. Left turn into Ballawinnie Road

Manual surveys undertaken on Thursday 14 May 2026 recorded 103 vehicles turning left from the East Derwent Highway into Ballawinnie Road during the 3 to 4 pm hour. When assessed against the State Growth weekday hourly flows for the same period, showing approximately 600 vehicles per hour in the northbound lanes, the turning volume sits within the Austrroads warrant threshold for considering a dedicated left-turn treatment.

Plotting QL (left-turning vehicles) against QM (50 percent of the two northbound lanes) places the movement in the zone where conflict risk increases due to slowing or stationary vehicles remaining within the through-lane. The red star on the Austrroads graph therefore indicates that a left-turn facility could be considered at Ballawinnie Road to reduce operational stress and improve overall performance.

Graph 3.1 – Left turn into Ballawinnie Road



Note: the minimum right-turn treatment for multilane roads is a CHR(s).

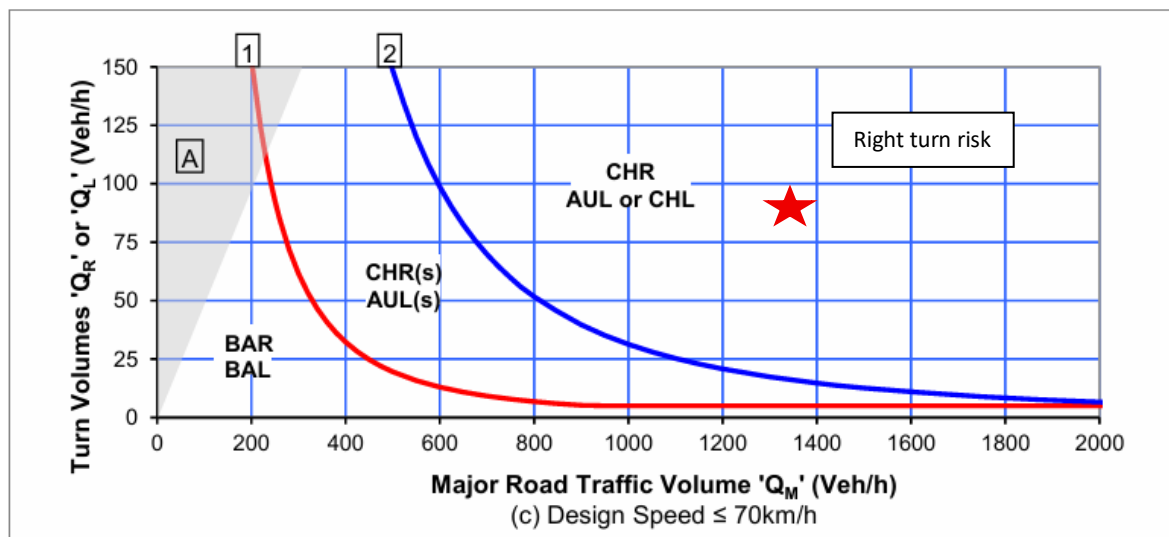
3.2. Right turn into Nietta Road

Manual surveys undertaken on Thursday 14 May 2026 recorded 73 vehicles turning right from the northbound carriageway into Nietta Road during the 3 to 4 pm hour, together with a further 14 vehicles undertaking a U-turn, giving a total of 87 right-turning movements.

When assessed against the State Growth weekday flows, approximately 600 northbound vehicles per hour and 444 southbound vehicles per hour, the corresponding QM value for a dual-lane environment is 1,044 (50 percent of each direction). Plotting QT against QM on the Austroads right-turn warrant graph places this movement well within the zone where a dedicated right-turn treatment should be considered, reflecting elevated conflict risk associated with slowing or stationary vehicles remaining within the through-lane.

Although the existing median opening adjacent to Nietta Road provides a limited level of storage, the plotted position (red star) indicates that a more comprehensive turning facility could be investigated to improve operational performance and reduce conflict exposure. The warrant position demonstrates that the interaction between turning demand and background highway flows reaches a level where a higher-order treatment may offer measurable safety and efficiency benefits.

Graph 3.2 – Right Turn and U-turn at Nietta Road



Note: the minimum right-turn treatment for multilane roads is a CHR(s).

The above analysis represents the worst-case scenario. However, with northbound highway flows exceeding 350 vehicles per lane for several hours, the underlying turning-movement conflict risk persists throughout this extended peak. This sustained level of background flow means that the operational and safety issues identified through the Austroads warrant assessment are not confined to a single peak hour but recur across multiple consecutive hours, reinforcing the need to consider dedicated turning treatments to manage conflict exposure and maintain reliable highway operation.

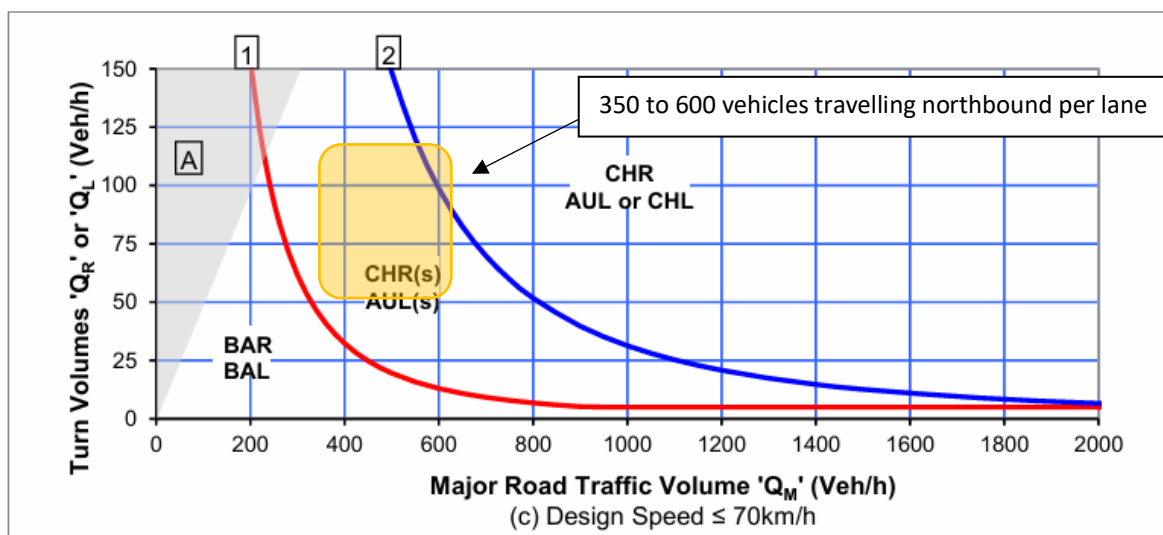
4. Development site turning risk

The same Austroads methodology can be applied to the development site, even without knowing the exact volume of left-turning traffic. The yellow highlight band on the warrant graph represents background flows between 350 and 600 vehicles per lane, and when plotted against a future development generating more than approximately 50 left-turn movements per hour, the movement enters the zone where conflict risk for following traffic becomes evident.

In this flow range, slowing or stationary vehicles remain within the through lane, increasing speed-differential and rear-end exposure. The level of risk is directly related to the number of left-turning vehicles plotted against the prevailing highway flow, with higher turning demand producing a corresponding rise in operational risk.

A dedicated left-turn treatment would mitigate this risk by allowing turning vehicles to decelerate and queue outside the highway traffic stream, improving operational performance and reducing conflict exposure for through-traffic.

Extract 4.0 -Left turning risk into development site



Note: the minimum right-turn treatment for multilane roads is a CHR(s).

AUL(S) represents Auxiliary left turn treatment (short). This short means the length of the deceleration taper only needs to be relatively short when the predominate vehicle type is light passenger vehicles.

5. Possible mitigations

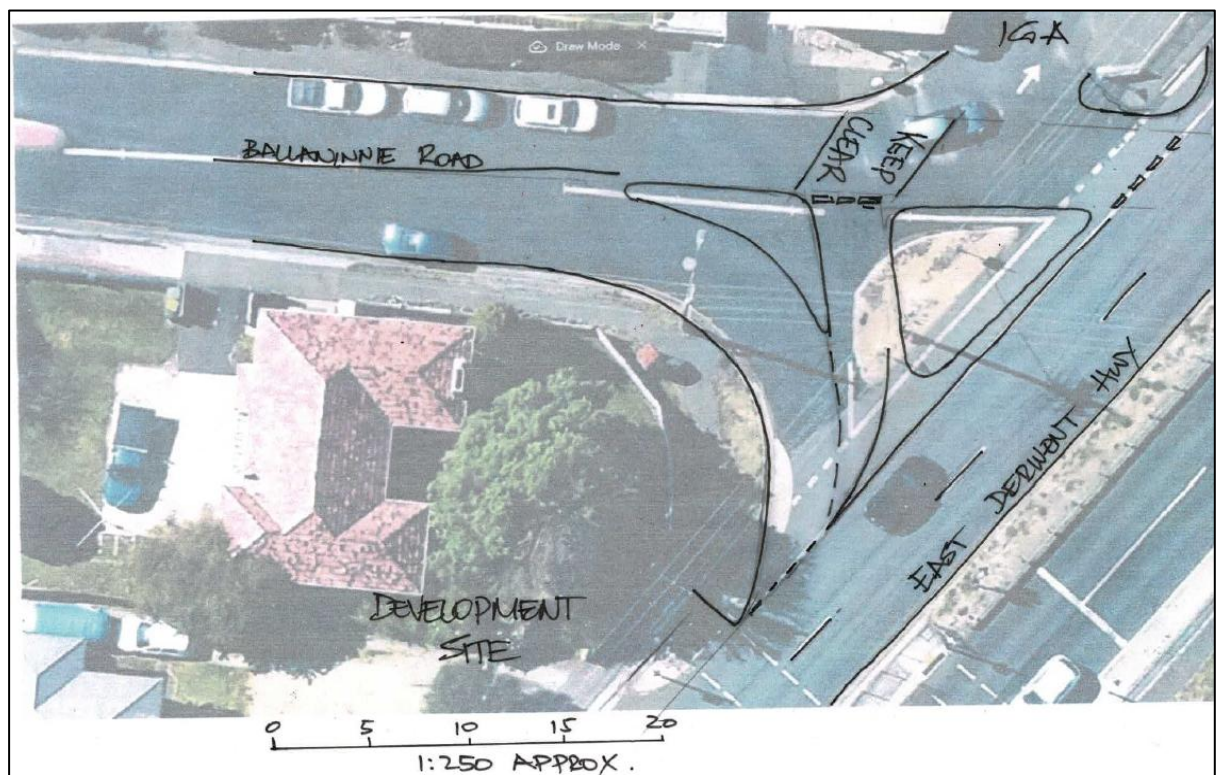
These mitigations are intended to address the current operational issues observed, while also providing resilience for future traffic increases. They represent practical measures that respond to the existing conflict patterns and geometric constraints. However, other mitigation options may also be suitable depending on final design considerations and broader network planning outcomes.

5.1. Ballawinnie Road and East Derwent Highway junction

The junction can be partially mitigated by reconfiguring the layout to improve storage, reduce conflict exposure, and maintain separation between turning and through-traffic movements by:

- extending the holding position for vehicle turning left out to the highway to increase storage capacity. Setting holding lines back from the through lane is generally a measure used on rural highways, and should be acceptable for 60 km/h speed environment, noting the holding line for Nietta Road (eastern approach) operates at edge of the through lane.
- Modify the traffic island to provide storage for two vehicles turning into the IGA
- Provide sufficient width to allow for IGA vehicles to be passed on the left.
- Modify the existing kerb blister associated with the pedestrian operated signals to assist with achieving this left lane pass a stationary IGA vehicle
- Provide 'Keep Clear' markings across the IGA access, noting 12 metres of storage from the highway holding line, should be suitable to accommodate two vehicles.

Diagram 5.1 Possible junction modification



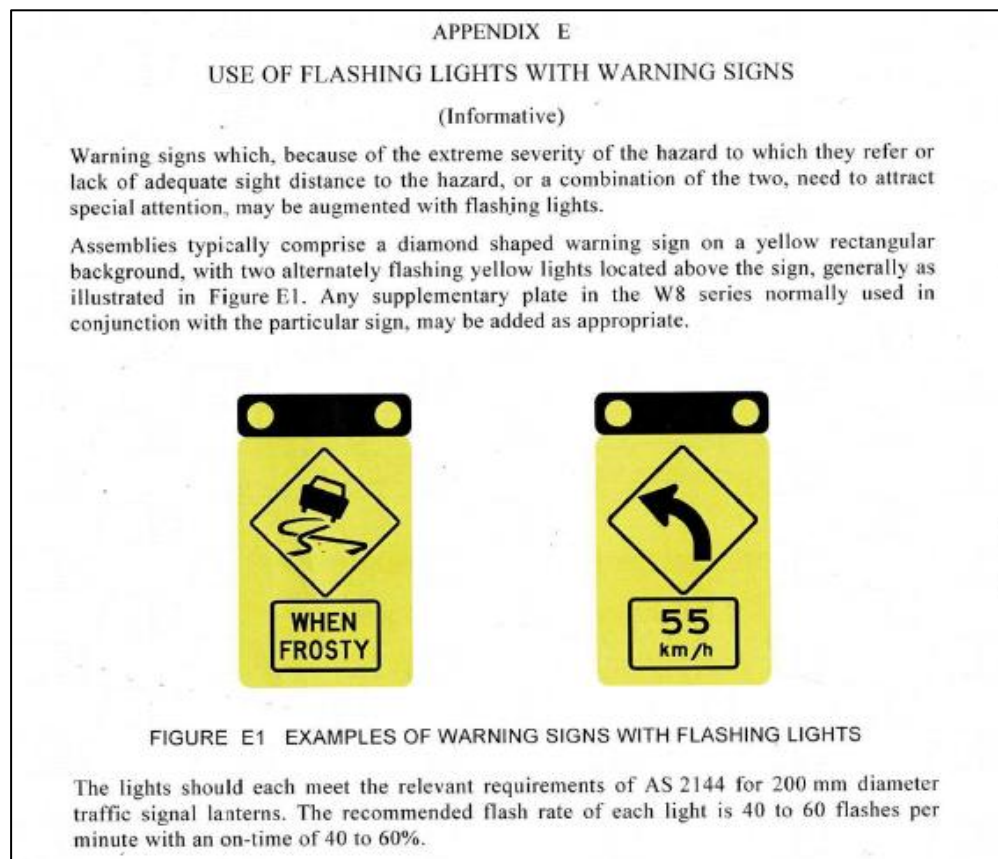
5.2. Pedestrian operated traffic signals

Supplement the current static traffic signal warning signs operating with 180 metre distance plate, with new flashing lights warning signs located closer to the stop line. These flashing signs will be connected to the traffic signals controller, activated when pedestrian pushes the button, the advance warning signs immediately flash, but the green pedestrian signals will commence several seconds later, allowing for the last vehicle passing the non-activate sign to past through the lights. This provides activate warning to motorists that the signals are changing to red, signifying the need to moderate operating speed in preparation to stop.

These signs were introduced when Bunnings Mornington was developed, when new traffic signals were installed on downhill grade beyond a vertical crest.

The connection between the traffic controller (controlling the signals) and the active signs relies on the traffic controller to be of a suitable standard.

Extract 5.2 - AS1743.2



5.3. Elevated turning risk into development site

As discussed in Section 3, the Austroads Guide indicates that the combination of left-turn demand and highway traffic flow is sufficient to generate an elevated conflict risk for vehicles turning into the development site when operating as a commercial activity. The constrained highway geometry increases the likelihood that slow-moving or potentially stationary left-turning vehicles will remain within the through-lane, creating speed-differential and rear-end exposure. In this context, a dedicated left-turn treatment that separates turning vehicles from the highway traffic stream could be a desirable outcome and should be investigated to improve operational performance and reduce conflict exposure.

5.4. Elevated turning risk at Nietta Road

Austroads guidance indicates that the combination of right-turn demand and through-traffic volumes at the junction reaches a level where turning-movement risk is elevated. Although the existing median opening adjacent to Nietta Road provides a limited degree of storage, the plotted warrant position (red star) shows that the interaction between slowing, or stationary right-turning vehicles and background highway flows is sufficient to warrant further investigation of a dedicated right-turn treatment. A higher-order facility with increased storage capacity would reduce conflict exposure and provide a more robust arrangement, particularly if additional turning movements, such as U-turns generated by a future commercial activity.

5.5. Elevated U-turn risk adjacent to the service station access

Dedicated storage within the median island would be desirable traffic outcome, to facilitate any increase in U-Turn movements, generated by future commercial development.

6. Conclusion

The analyses confirms that existing turning movements at Ballawinnie Road and Nietta Road already generate elevated conflict risk under current highway flows, with Austroads warrant plots indicating that dedicated turning treatments should be considered.

The same methodology shows that future development-related turning demand could also create operational pressure on the northbound carriageway, reinforcing the value of providing auxiliary turning facilities to separate slowing or stationary vehicles from through-traffic.

The mitigations outlined offer practical options to improve present junction performance, while building resilience for future traffic growth. Consideration of funding pathways for any works lies outside the scope of this technical analysis.

7. Appendix

Table 7.0 - Manual survey data collected on Thursday 14 May 2026

Time	Ballawinnie Road		IGA Supermarket		Nietta Road median opening		
	Left In	Left Out	Right In	Left In	Right In	U-Turn	Opposing Right
2:45 to 3:00 pm	24	8	14	3	20	4	6
3:00 to 3:15pm	42	9	25	9	17	1	5
3:15 to 3:30pm	24	6	13	9	18	0	3
3:30 to 3:45pm	13	6	9	7	18	9	3
3:45 to 4:00pm	17	4	8	3	16	2	2
4:00 to 4:15pm	20	11	13	4	21	3	5
4:45 to 4:30pm	23	2	19	3	13	4	1
4:30 to 4:45pm	19	5	13	7	30	2	5
Total	182	51	114	45	153	25	30