Aurecon Australasia Pty Ltd
ABN 54 005 139 873
Level 11, 73 Miller Street
North Sydney 2060 Australia
PO Box 1319
North Sydney NSW 2059
Australia

T +61 2 9465 5599
F +61 2 9465 5598
E sydney@aurecongroup.com
W aurecongroup.com

Memorandum

To	**Andrew Naylor**	From	**Brendan Hogan, Dominic Lim**
Copy	**Meg Baldo**	Reference	**527183**
Date	**2025-09-16**	Pages (including this page)	**14**
Subject	**NE REZ RUA – Potential Implications of sealing Whitehouse Lane and Marsden Park Road**		

1 Introduction

Oversize Overmass (OSOM) movements to the New England Renewable Energy Zone (NE REZ) involve transport activities for both generator projects and network operator vehicles. To facilitate these movements, a detour route has been proposed near the township of Tamworth to avoid OSOM vehicles travelling through the town centre. The proposed detour would allow OSOM vehicles to exit the New England Highway onto Whitehouse Lane, located just south of Tamworth, then proceed along Marsden Park Road, O'Briens Lane, and Nundle Road before rejoining the New England Highway. The total length of this detour is approximately 11.7 kilometres, and all roads forming the route are classified as local roads under the jurisdiction of Tamworth Regional Council. While most of the detour is sealed, about 4.6 kilometres remains unsealed, specifically the section of Whitehouse Lane east of Ascot-Calala Road through to Marsden Park Road as shown in Figure 1-1..

Initial pavement assessments indicate that sealing the road is not required to support OSOM movements. This memorandum has been prepared to outline potential traffic implications should the sealing of the detour route be considered. Although not essential, sealing would improve surface quality by enhancing ride comfort and reducing dust nuisance. Depending on the pavement and surfacing type, sealing may also provide benefits in durability and weather resilience. However, a fully sealed road link could attract additional traffic due to the improved surface and a reduction in travel time by approximately five minutes compared to passing through Tamworth.

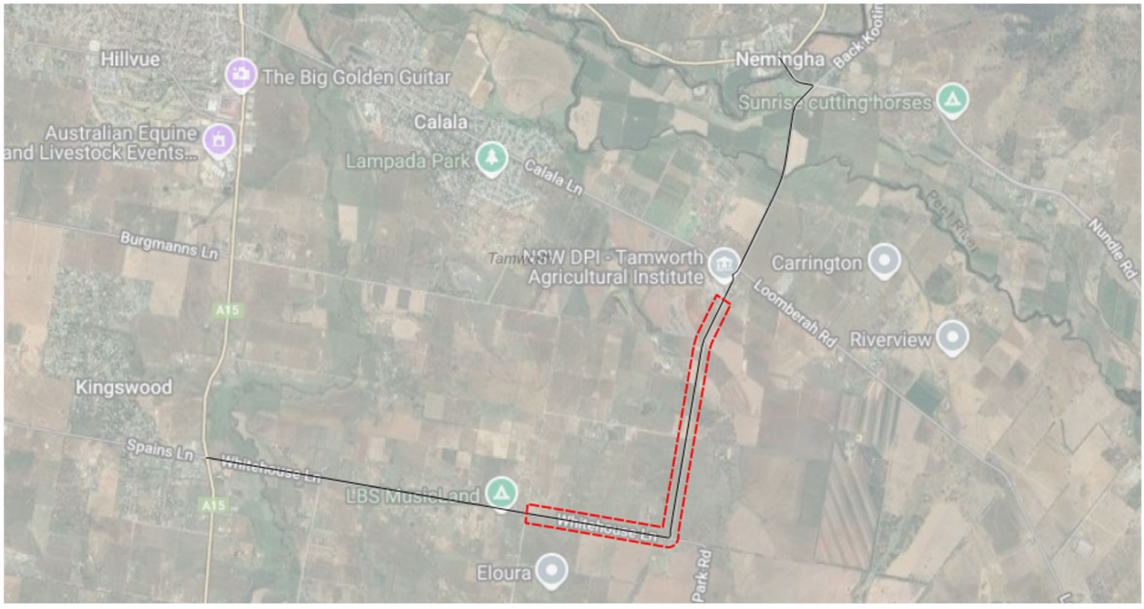

Figure 1-1: Unsealed section on Tamworth Detour

2 Purpose of this memorandum

The purpose of this technical memorandum is to provide a high-level assessment of the potential implications that may be introduced due to sealing of Whitehouse Lane, east of Ascot-Calala Road to Marsden Park Road, south of the intersection with Calala Lane and O'Briens Lane. This assessment considers:

- Existing traffic flows through the Tamworth detour and potential additional traffic that may be attracted to the detour due to improved road surface conditions
- Existing speeds and potential impacts to travel speeds
- Potential impacts to safety including an assessment of the existing sight distance

3 Methodology

3.1 Traffic flows

Traffic survey data was collected along this route, the surveys comprised of intersection turn counts and midblock tube counts. The locations of the traffic survey data are shown in Figure 3-1 and is summarised in Table 3-1.

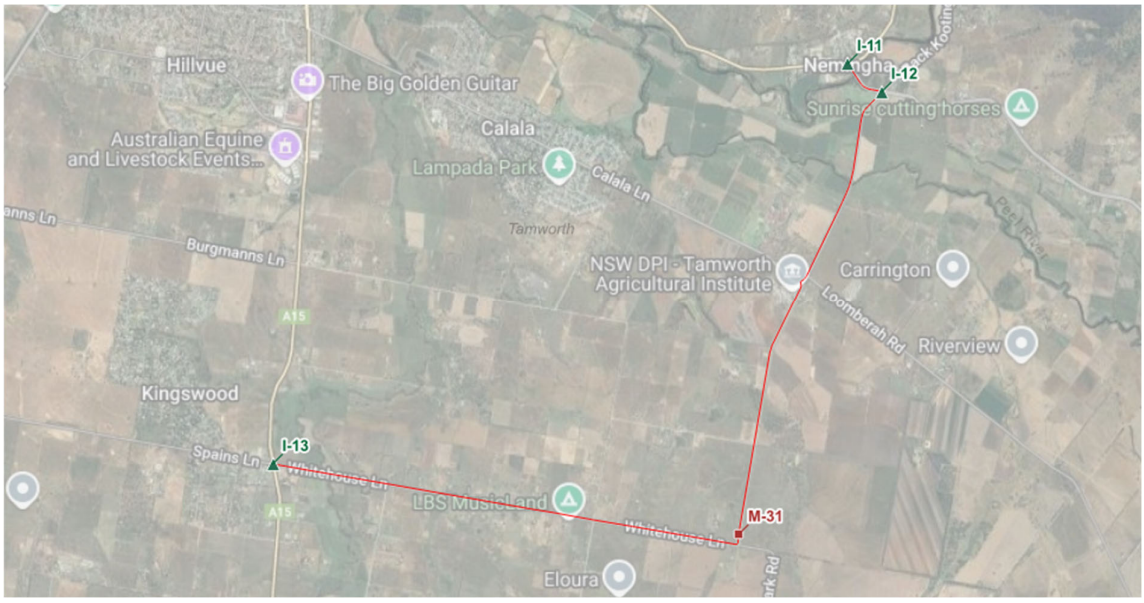

Figure 3-1: Traffic survey locations along Tamworth detour

Table 3-1: Traffic survey details

Survey type	ID	Location	Survey period
Intersection turn count	I-11	Intersection of New England Highway and Nundle Road	Friday, 13 December 2024[1] ■ **AM period**: 6:00 AM to 9:00 AM ■ **PM period**: 3:00 PM to 6:00 PM
	I-12	Intersection of Nundle Road and O'Briens Lane	
	I-13	Intersection of New England Highway and Whitehouse Lane	
Midblock tube count	M-31	Marsden Park Road north of Whitehouse Lane	Friday, 6 December 2024 to Thursday, 12 December 2024 ■ 24-hour periods

3.2 Speeds and travel time

Existing speed limits along the Tamworth Detour were extracted from the publicly available TfNSW *Speed Zones* dataset (updated 14 August 2025) available via the Transport Open Data hub. Travel times were determined using publicly available resources. Scenarios considered include current conditions with unsealed portions, and future conditions within the entirety of the route sealed.

3.3 Safety considerations

3.3.1 Sight distance

An assessment of the existing sight distances available at the key intersections along the Tamworth detour was undertaken in accordance with the Austroads *Guide to Road Design Part 3: Geometric Design* and *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*. The required sight distances for trucks were calculated and compared against the existing sight distances. A summary of the sight distances assessed is provided in Table 3-2.

Table 3-2: Summary of sight distances assessed

Sight distance	Description
Approach Sight Distance (ASD)	■ The minimum sight distance required on minor road approaches to all intersections is essential to ensure that drivers are adequately aware of the presence of the intersection. This sight distance must be maintained as a safety baseline. ■ It is also desirable to provide adequate sight distance on major road approaches so that drivers can clearly see the pavement and road markings within the intersection. Wherever practicable, ASD should be achieved on these approaches to enhance driver awareness and safety.
Safe Intersection Sight Distance (SISD)	■ The SISD represents the minimum sight distance that must be provided on the major road approaches at any intersection. Ensuring this minimum sight distance is critical for allowing drivers sufficient visibility to detect and respond to conflicting vehicles.

[1] This survey time is representative based on fixed counts along route

3.3.2 Crash history

A review of the recorded crash history, for the five-year period from 2019 to 2023 was undertaken to identify any trend and assess if any introduced demand volumes along the sealed detour would exacerbate the known crash hotspots. The crash history was obtained from from the publicly available TfNSW *NSW Crash Data* dataset (updated 3 October 2024) available via the Transport Open Data hub.

4 Findings

4.1 Traffic flows

Traffic survey data for the AM period indicates a generally low volume of vehicles entering Whitehouse Lane from both the New England Highway and Spains Lane. Vehicle counts during this period were approximately 10 to 20 from each approach, with the majority being Light Vehicles (LV).

The survey data also indicates that there is no fluctuation in the volume of vehicles exiting Whitehouse Lane during the AM and PM period, with volumes ranging from 80 to 100 vehicles. The existing land use along Whitehouse Lane is zoned Primary Production Small Lots (RU4) which is not expected to attract high traffic volumes.

Table 4-1: Utilisation of Whitehouse Lane, at New England Highway

Movement	Period	LV	HV	Total
Entering Whitehouse Lane	AM period	37	10	47
	PM period	101	7	108
Exiting Whitehouse Lane	AM period	88	11	99
	PM period	77	4	81

A midblock traffic survey conducted on Marsden Park Road, north of Whitehouse Lane, recorded an average weekday volume of 128 vehicles travelling northbound and 139 vehicles travelling southbound over a 24-hour period. Analysis of the vehicle classifications from the survey indicates that the majority of daily traffic consists of Class 1 vehicles, accounting for 59% of the total. These are primarily short vehicles such as passenger cars and motorcycles. Class 3 vehicles, which include two-axle trucks, represent the next largest group at 24% of the recorded traffic.

From the southern approach at the New England Highway and Whitehouse Lane intersection, a low volume of vehicles (~15 vehicles) were observed to turn right onto Whitehouse Lane. During the AM period, 9 HV were observed to turn right onto Whitehouse Lane, however, the midblock survey indicates that between the 6:00 AM to 9:00 AM period, there are generally no northbound HV movements on Marsden Park Road, indicating that HV utilising Whitehouse Lane are accessing the Primary Production Small Lots (RU4) lots along the road.

The weekday recorded volumes per direction and Heavy Vehicle (HV) percentile is summarised in .

Table 4-2 and the recorded daily vehicle classification is shown in Figure 4-1.

Table 4-2: Weekday recorded volumes per direction and Heavy Vehicle (HV) percentile on Marsden Park Road

Direction	Monday		Tuesday		Wednesday		Thursday		Friday	
	Total	**HV%**	**Total**	**HV%**	**Total**	**HV%**	**Total**	**HV%**	**Total**	**HV%**
Northbound	133	27.1%	74	39.2%	119	29.4%	155	30.3%	161	34.2%
Southbound	179	31.3%	65	35.4%	138	38.4%	153	40.5%	161	30.4%
Total	**312**	**39.5%**	**139**	**37.4%**	**257**	**34.2%**	**308**	**35.4%**	**322**	**32.3%**

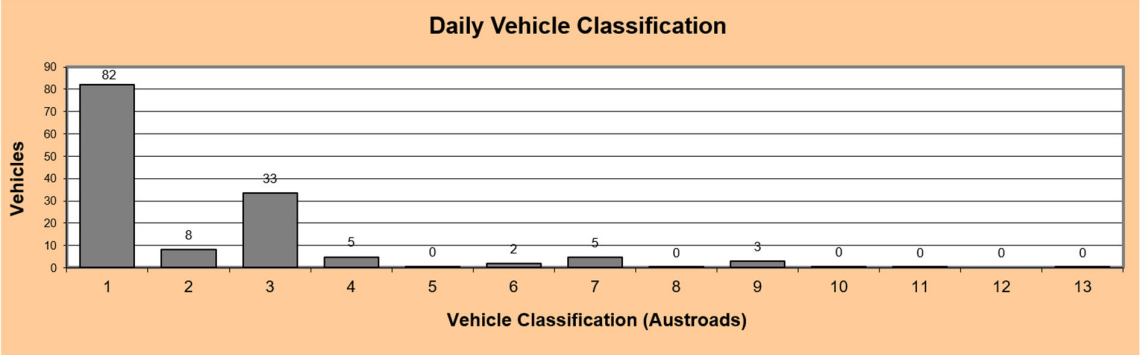

Figure 4-1: Distribution of recorded daily vehicle classification along Marsden Park Road

Typical traffic conditions at the Farrer Memorial Agricultural High School access points, which connect to Calala Lane and O'Briens Lane shows a slight decrease in traffic flow on the two lanes, particularly during 7:00 AM to 8:00 AM as shown in Figure 4-2, and 3:00 PM to 4:00 PM

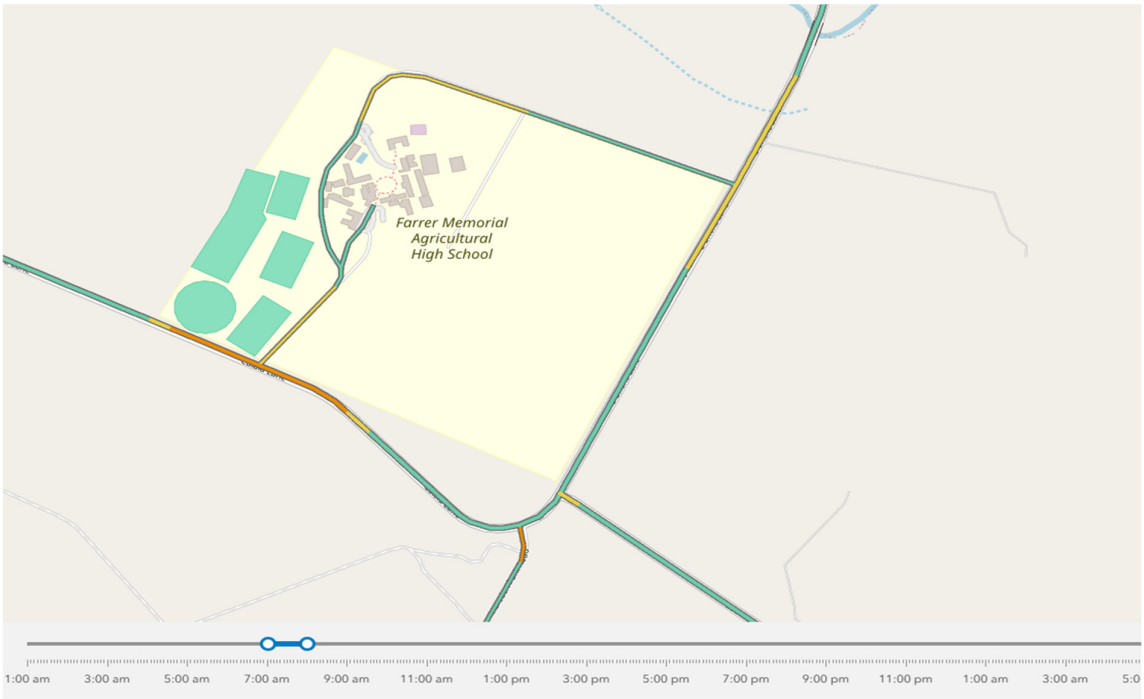

Figure 4-2: Traffic conditions around Farrer Memorial Agricultural High School (7:00 AM to 8:00 AM)

At the intersection of O'Brien's Lane with Nundle Road and Back Kootingal Road, both Nundle Road and O'Brien's Lane experience high traffic volumes, ranging from approximately 300 to 400 vehicles during each survey period. Notably, during the PM peak period, traffic on the western approach of Nundle Road increased to around 680 vehicles, with the majority continuing through to the eastern leg or turning right onto O'Brien's Lane. This increase is likely influenced by trips generated by Farrer Memorial Agricultural High School and Carinya Christian School in the township of Calala, which are accessible via O'Brien's Lane. This route provides a quicker alternative compared to travelling through the town centre along New England Highway. Furthermore, substantial traffic on O'Brien's Lane also comprises of residential vehicles accessing the residential catchment area connected to Calala Lane.

A comparison with traffic volumes recorded at the midblock survey on Marsden Park Road show a significant reduction, indicating that most traffic on O'Brien's Lane is associated with movements to and from Calala Lane. Only a relatively small volume of vehicles appears to be using O'Brien's Lane as a through-route to bypass the Tamworth town centre.

At the intersection of Nundle Road and New England Highway, a consistently high volume of vehicles is observed turning from New England Highway onto Nundle Road, with approximately 200 vehicles recorded during the AM peak period and around 360 vehicles during the PM peak period. These figures align with traffic data collected at the O'Brien's Lane intersection with Nundle Road and Back Kootingal Road. A substantial proportion of this traffic is expected to continue travelling along Nundle Road, which is classified as a regional road and serves as a key connection to other major town centres.

Within the Tamworth town centre, a high volume of vehicles is observed making right turns from the New England Highway onto Scott Road during the AM and PM periods. Traffic counts indicate between 1,000 and 1,200 vehicles over a three-hour period.

At the roundabout intersection of New England Highway and Murray Road, located north of Scott Road, vehicle movements show a fairly even distribution of the 1,000 vehicles during the AM period. Of these, around 300 vehicles turn right towards Nemingha. This right-turn volume increases significantly during the evening peak, rising to approximately 900 vehicles. Conversely, the left turn movement from New England Highway to Scott Road consistently records between 350 and 400 vehicles in both time periods.

Considering other traffic flows throughout the day, it is estimated that over 350 vehicles travel in each direction between South Tamworth and East Tamworth via the town centre during weekdays. The proposed sealing of the Tamworth detour may attract a portion of this traffic. As a result, traffic volumes on the detour roads could increase substantially, leading to higher delays along the route and at the extremities which are priority-controlled intersections where the detour roads hold lower priority status than New England Highway. Additionally, access to and from properties directly fronting the detour roads may be adversely affected, as the increased traffic flow may reduce the gaps between vehicles, causing further delays.

4.2 Speeds and travel time

The existing speed limits in accordance with the TfNSW *Speed Zones* dataset and the extents to which the speed limits apply are illustrated in Figure 4-3. A school zone speed limit of 40 km/h applies O'Briens Lane, north of Loomberah Road to immediately north of Reedy Creek, in the vicinity of Farrer Memorial Agricultural High School.

Marsden Park Road is currently zoned as a 100 km/h road, however the midblock survey along the unsealed section of the Tamworth detour captured an 85 percentile speed of approximately 70 km/h. This is expected as vehicles tend to slow down when travelling on unsealed roads, due to unpredictable and uneven surface conditions (and therefore comfort), dust kick up and reduced traction which in turn causes increased braking distance. It is assumed that this travel speed applies to the unsealed section of the route. Under expected travel speeds (rather than posted speed limits), travel times along the detour route are approximately 9.5 mins. If the unsealed section was sealed allowing vehicles to travel at higher speeds, the travel time is reduced by 1.5 mins, this reduction in travel time may attract a moderate volume of additional vehicles seeking to detour around the Tamworth town centre, which would otherwise have a travel time of approximately 15 mins. The expected average travel times under free-flow unsealed and sealed conditions are summarised in Table 4-3.

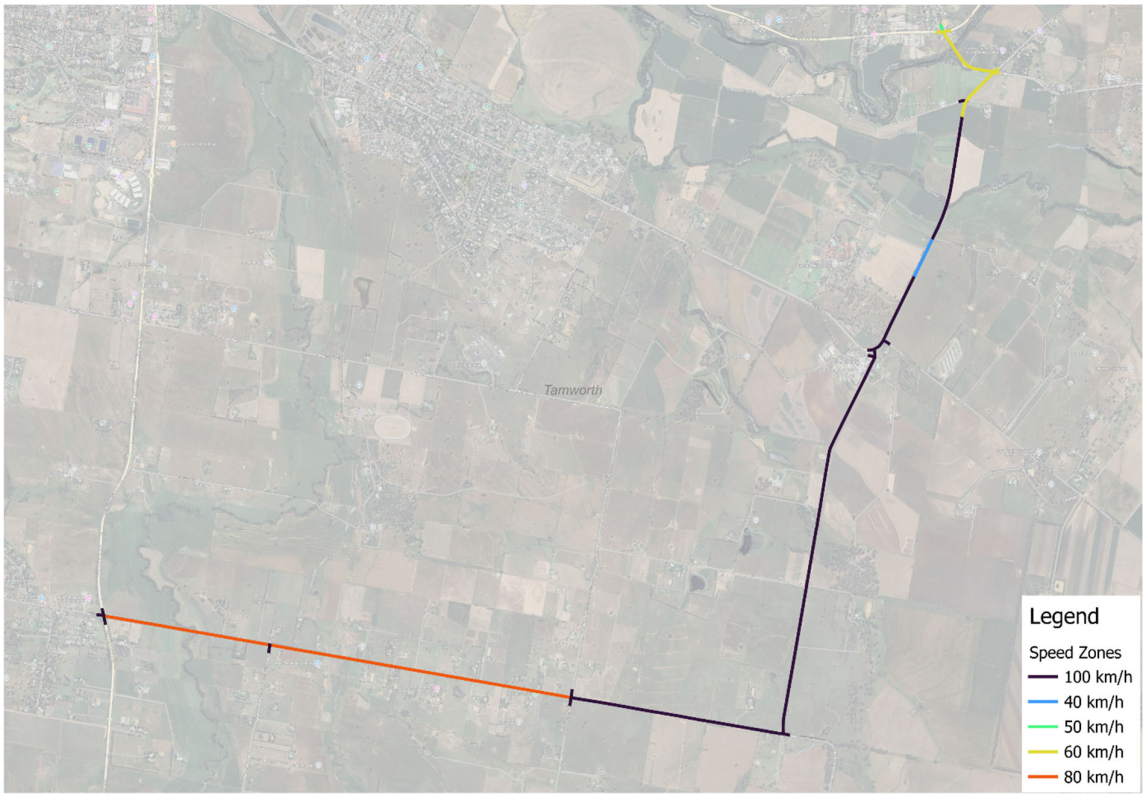

Figure 4-3: Tamworth detour speed zones

Table 4-3: Travel times along Tamworth detour route

Speed limit	Extent	Distance	Travel time under realistic unsealed conditions	Travel time under posted speeds (sealed conditions)
80 km/h	Whitehouse Lane, between New England Highway and Ascot-Calala Road	3.8 km	3 min	3 min
100 km/h	Whitehouse Lane, east of Ascot-Calala Road till O'Briens Lane, south of Cross Park Road	2.2 km (sealed) 4.6 km (unsealed)	■ 1.5 min (sealed) ■ 4 min (unsealed)	4 min
60 km/h	O'Briens Lane, south of Cross Park Road till Nundle Road intersection with New England Highway	1.1 km	1 min	1 min
Total		**11.7 km**	**9.5 min**	**8 min**

The travel time between South Tamworth and East Tamworth via the town centre currently requires ~15 minutes and is around 15km. The Tamworth detour provides an option to avoid traffic within the town centre and in its current condition, can save up to 5 minutes, and this will only be improved upon with the sealing of Marsden Park Road and Whitehouse Lane. The time saved is considered high from a driving perspective and is expected to be attractive to local traffic with improved road surface. Given the fact that volumes may be increased along the link when sealed the 80km/h zone could potentially be extended along the length of the section of the detour.

4.3 Safety considerations

4.3.1 Sight distance

An assessment of the existing sight distances was undertaken at the following intersections and is summarised in Table 4-4:

- Whitehouse Lane / Marsden Park Road
- Marsden Park Road / O'Briens Lane / Calala Lane
- O'Briens Lane / Cross Park Road

Table 4-4: Summary of 2 dimensional sight distance assessments- based on design speed (10km/h above posted speed)

Intersection	Approach	Road	Required sight distance		Currently available?
			ASD	SISD	
Whitehouse Lane / Marsden Park Road	Northern (Major Road)	Marsden Park Road		285m	Yes
	Western (Major Road)	Whitehouse Lane		285m	Yes
	Eastern (Minor Road)	Marsden Park Road	193m		Yes
Marsden Park Road / O'Briens Lane / Calala Lane	Northern (Major Road)	O'Briens Lane		248m	No (~155m available)
	Western (Major Road)	Calala Lane		248m	No (~120m available)
	Southern (Minor Road)	Marsden Park Road	193m		No (~140m available)
O'Briens Lane / Cross Park Road	Northern (Major Road)	O'Briens Lane		151m	Yes
	Southern (Major Road)	O'Briens Lane		151m	Yes
	Western (Minor Road)	Cross Park Road	193m		Yes

At the intersection of Marsden Park Road / O'Briens Lane / Calala Lane, existing sight distances are not compliant with the requirements. The required ASD on the southern approach to the Marsden Park Road / O'Briens Lane / Calala Lane is currently not achieved due to fence line as shown in Figure 4-4. Although the fence line is relatively low, it obstructs the visibility of the intersection.

Figure 4-4: Current ASD from the southern approach of Marsden Park Road / O'Briens Lane / Calala Lane

From the western approach. The SISD requirement is currently not achieved due to the terrain and geometry of the intersection. Should the vegetation on the northern side of Calala Lane and south-western corner of the intersection overgrow, the intersection is likely be obstructed from the driver's visibility. The current available SISD from the western approach is shown in Figure 4-5.

Figure 4-5: Current SISD from the western approach of Marsden Park Road / O'Briens Lane / Calala Lane

Similarly, from the northern approach of O'Briens Lane, vehicles travel on a very gradual uphill slope. The intersection may also be obstructed by overgrown vegetation on the northern side of the bend. The current available SISD from the western approach is shown in Figure 4-6.

Figure 4-6: Current SISD from the northern approach of Marsden Park Road / O'Briens Lane / Calala Lane

The Marsden Park Road / O'Briens Lane / Calala Lane intersection currently does not provide safe sight distances due to the speed and alignment of the approaches, the bounding vegetation and terrain. The assessment indicates that an additional 100m of clear sight distance is required on the major road approaches to deem the SISD at this intersection as adequate. However, because of the significant bend, and terrain of the intersection, this cannot be achieved without significant works. Therefore, a speed reduction and an increase in the maintenance of the vegetation bounding this intersection may to improve the safety of this intersection, particularly with the additional traffic that sealing of the detour route may attract.

4.3.2 Crash history

The crash history along the Tamworth detour between 2019 to 2023 recorded 11 crashes, equating to one crash per kilometre. The locations of the crashes resulting in fatal, serious or moderate injury are shown in Figure 4-7. A crash resulting in a fatality occurred at the Marsden Park Road / O'Briens Lane / Calala Lane intersection which involved a motorcycle, highlighting a vulnerability for motorcyclists due to the road alignment, approach speeds and poor sight lines. Three of the recorded crashes occurred in areas with potholes, specifically along Whitehouse Lane and the unsealed section of Marsden Park Road, suggesting road surface condition as a contributing factor. Along Marsden Park Road, a rollover occurred suggesting that the decrease in traction has a high probability of affecting heavier vehicles. A significant proportion of the crashes involved light trucks and semi-trailer vehicles, emphasising the risks associated with heavy and commercial vehicle movements on the detour. The crashes primarily occurred during dry, fine and daylight conditions.

Figure 4-7: Crash history along the Tamworth detour route (2019 to 2023)

The crash history along the alternate route via the Tamworth town centre detour between 2019 and 2023 recorded a total of 44 crashes, equating to approximately three crashes per kilometre. The locations of the crashes resulting in fatal, serious or moderate injury are shown in Figure 4-8. A crash resulting in a fatality was recorded on a straight segment of New England Highway, west of Nundle Road. The crash involved a LV veering off the carriageway towards the left into an object. This occurred during dry, fine and daylight conditions. A high proportion of the recorded crashes involved a LV and HV, particularly light utility trucks and B-doubles. Similar to the Tamworth detour, most crashes occurred under dry, fine weather and during daylight hours.

The sealing of the Tamworth detour route is expected to result in an increase in the number of vehicles using the Tamworth detour to travel between South Tamworth and East Tamworth. From a safety perspective, this change may offer benefits by reducing traffic volumes through the Tamworth town centre, resulting in a decrease the likelihood of crashes in that area particularly between LV and HV. Consequently, there would be an increase in the probability of crashes along the detour, necessitating the implementation of appropriate safety measures. To assist with a safe environment for higher traffic volumes and ensure compliance to Austroads Guides, interventions such as improved delineation, lighting and targeted speed reductions at key locations or the installation of guard rail may be required.

Figure 4-8: Crash history along alternate route via Tamworth town centre (2019 to 2023)

5 Conclusion

In conclusion, sealing the gravel road offers benefits such as improved surface quality and dust management. Depending on pavement and surfacing type selected, there may be a reduction in annual routine maintenance needs, although future maintenance costs may ultimately be higher and council's willingness to maintain this asset should be considered. Changes in drainage and runoff patterns require consideration to confirm suitability and compliance including on the gravel to sealed interface points.

The improved road quality is expected to induce traffic volumes and speeds, potentially raising safety concerns that may require enhanced signage, wider upgrades, and speed management measures, particularly at connections with existing roads such as the New England Highway and Nundle Road. The form and control of these intersections may need to be reviewed if turning volumes are higher based on increased traffic due to sealing the road. The increased pavement at other intersections to accommodate OSOM movements may physically enable and induce other larger vehicles to use this link and avoid going through Tamworth.

Sealing may enhance connectivity and accessibility for residents and services, increasing network resilience through improved travel time reliability and transport efficiency. The advantages and disadvantages of this implementation are summarised in Table 5-1.

Table 5-1: Advantages and disadvantages of sealing the Tamworth detour

Advantages	Disadvantages
■ Decrease in travel time of up six minutes when compared to travelling through the town centre ■ Allowing faster travel speeds along Marsden Park Road and Whitehouse Lane ■ Improvement to road network performance within the Tamworth town centre, particularly at junctions where higher order roads such as Gunnedah Road (B56) interact with New England Highway ■ Decrease in the probability of crashes within the town centre due to a lower throughput of traffic	■ Potential increase of up to 350 vehicles in each direction along the Tamworth detour ■ Increase in delays, particularly when vehicles seek to access properties and at the extremities which are priority-controlled intersections where the detour roads hold lower priority status than New England Highway ■ Increase in the probability of crashes along the Tamworth detour due to increased traffic volume ■ Existing road is not compliant to AGRD – additional upgrades potentially required to ensure safe operation and avoid additional crashes and higher severity outcomes, with transferral of additional traffic and higher operating speeds.

The improved road surface and travel times is likely to attract an increase in vehicles. Environmental impacts from construction and sealing activities should also be assessed to minimise disturbance to vegetation, soils, and wildlife habitats. Community consultation should also be undertaken.

The sealing may change the road's operational characteristics which may require upgrades to road geometry, drainage systems, and pavement standards to ensure safety and functionality. Ownership and responsibility for ongoing management, whether by TfNSW or Council, may influence future decisions on traffic diversion, road standards, and mitigation of social and environmental impacts. While not needed for OSOM movements an investment to sealing the road presents trade-offs that must be carefully balanced to optimise long-term benefits while managing potential risks associated with increased traffic flows and environmental impact.