



St Marys Freight Hub


Independent Post Opening Traffic Audit

Pacific National Pty Ltd

14 November 2023

→ **The Power of Commitment**



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1. Introduction

1.1 Purpose of this report

GHD has been engaged by Pacific National (on behalf of the site operator ACFS), to prepare a post-opening Traffic Audit of the St Marys Freight Hub, consistent with the Development Consent, application number SSD 7308 (dated 7 May 2020) Conditions E5 and E6:

Within 90 days of the project reaching annual throughput of 50,000 TEU (twenty-foot equivalent unit container), 150,000 TEU and 301,000 TEU, or as may be directed by the Planning Secretary, and during a period in which the project is operating under normal operating conditions, a Traffic Audit of the project must be undertaken by an independent qualified person(s) approved by the Planning Secretary. The Traffic Audit shall include, but not necessarily be limited to:

- a) Assessment of the traffic performance of the project against the predictions made in the documents referred to under condition A2 of this approval.*
- b) Consideration of the results of the traffic monitoring during a representative period.*
- c) Review of compliance with the approved access routes and performance measures prescribed under this consent.*
- d) Consideration of traffic-related issues raised by TfNSW and Council.*
- e) Findings and recommendations with respect to the traffic performance of the project and any additional measures that may be required to manage traffic associated with the project.*

Within 28 days of conducting the Traffic Audit referred to under condition E5 of this consent, the Applicant must provide the Planning Secretary with a copy of the Traffic Audit report. If the Traffic Audit report identifies any non-compliance with the traffic predictions, approved access routes, or performance measures, the Applicant must detail what additional measures would be implemented to ensure compliance, clearly indicating who would implement these measures, when these measures would be implemented, and how the effectiveness of these measures would be measured and reported to the Planning Secretary.

This Traffic Audit has been prepared to address the requirement of the site reaching an annual throughput of 50,000 TEUs. The site (subject of this audit) is the St Marys Freight Hub, which is an intermodal container terminal located north of St Marys Railway Station in the Penrith Local Government Area, NSW. The site location and study area considered as part of this Traffic Audit is shown in Figure 1.1.



Figure 1.1 Site Location and Transport Access

Source: St Mary's Freight Hub: Traffic Audit Report (March 2023)

The Traffic Audit seeks to assess and compare the site's post-opening traffic impacts, against forecast traffic impacts outlined in the Traffic and Transport Assessment, prepared by consultants Bitzios (September 2019), which supported the project's Environmental Impact Statement (EIS).

As part of the audit, surveys were also commissioned through a traffic survey sub-consultant TTS, consistent with previous surveys undertaken as part to the 2019 Traffic and Transport Assessment. These included:

- Intersection turning counts.
- Origin destination surveys.
- Classified weekly traffic surveys at the heavy vehicle access to the terminal.

1.2 Development consent condition details

A summary of the development consent conditions (application number SSD 7308, Traffic Audit item E5) is provided in Table 1.1 below, including reference to the section of this audit report where they have been addressed.

Table 1.1 Development consent condition and section

| Condition item | Addressed in section(s) |
|---|--|
| Undertaken by a person(s) approved by the Planning Secretary and an independent person(s). | Approval has been received by DPE (refer to Appendix A). |
| Condition E5 states the Planning Secretary must approve the Traffic Audit undertaker(s). | Approval has been received by DPE (refer to Appendix A). |
| Assessment of the traffic performance of the project against the predictions made in the documents referred to under condition A2 of this approval. | Refer Section 4.3 (light vehicles) and Section 4.4 (heavy vehicles). |
| Consideration of the results of the traffic monitoring during a representative period. | Traffic survey methodology discussed in Section 4.2, results of traffic monitoring discussed in Section 4.3 (light vehicles) and Section 4.4 (heavy vehicles). |
| Review of compliance with the approved access routes and performance measures prescribed under this consent. | Refer Section 4.4 (heavy vehicles). |
| Consideration of traffic-related issues raised by TfNSW and Council. | Refer Section 3 (stakeholder consultation). |
| Findings and recommendations with respect to the traffic performance of the project and any additional measures that may be required to manage traffic associated with the project." | Refer Section 6 (conclusion). |
| Condition E5(b) Part B requires traffic monitoring to occur during a representative period. Monitoring must occur on routes used by the Project. The data has to be provided as an appendix to support the Traffic Audit's conclusions. | Traffic survey methodology discussed in Section 4.2, and traffic survey data provided in Appendix D. |
| Condition E6 of the consent states: If the Traffic Audit report identifies any non-compliance with the traffic predictions, approved access routes, or performance measures, the Applicant must detail what additional measures would be implemented to ensure compliance, clearly indicating who would implement these measures, when these measures would be implemented, and how the effectiveness of these measures would be measured and reported to the Planning Secretary." | Refer Section 6 (conclusion). |
| Condition E7 of the consent states: "Following consideration of the outcomes of the Traffic Audit and the Traffic Audit report referred to under conditions E5 and E6 of this consent, the Planning Secretary may require the Applicant to implement additional traffic mitigation, monitoring or management measures to address traffic impacts associated with the project. The Planning Secretary may require any or all of the measures identified in the Traffic Audit report, or other measures considered appropriate by the Planning Secretary (including additional local area traffic management measures or on-site traffic management controls) to be implemented. The Applicant must implement the measures required by the Planning Secretary within such period as the Planning Secretary may specify." | Noted. |

In the preparation of this Traffic Audit, correspondence was also received by the Department of Planning and Environment (DPE). Responses to those correspondence queries are provided in Table 1.2 below, including their respective references in this audit report.

Table 1.2 DPE Comments dated 28 March 2023

| Condition Item | Outcome |
|---|---|
| <p>Comment E5(b) Part B requires traffic monitoring to occur during a representative period. Monitoring must occur on routes used by the Project. The data has to be provided as an appendix to support the Traffic Audit's conclusions.</p> | Traffic survey methodology discussed in Section 4.2, and traffic survey data provided in Appendix D. |
| <p>Comment E5(c) The Traffic Audit seems to downplay non-compliances and inconsistencies with the EIS/RTS reports and OTAMP. These include:</p> <ul style="list-style-type: none"> – No references to the use of A-Double trucks on the Project. – No references to the use of truck routes different to those identified in the OTAMP/EIS/RTS. – Monitoring indicated the frequency of truck movements between 6-11 PM was higher than during the day, whereas the EIS/RTS/OTAMP had predicted a sharp decline in movements after 5 PM. The Traffic Audit downplayed the increase from 6-11 PM as truck movements from 10 PM-6 AM and during peak hours were closer to what the EIS/RTS/OTAMP had predicted; and – Light vehicle traffic movements were 25% higher than predicted; however, the Traffic Audit downplayed it as 'would have a negligible impact on Lee Holm Road or the broader road network'. <p>The Traffic Audit needs to review compliances in an objective manner, not assess and evaluate their impacts.</p> | External road impacts from light and heavy vehicles are discussed in Section 4.3 (light vehicles) and 4.4 (heavy vehicles), inclusive of a discussion on A-Double trucks. |
| <p>Comment E5(d) The Independent Audit Guideline requires the Traffic Auditor speak with Transport for NSW and Council before undertaking the site visit. The Traffic Audit needs to identify issues raised by the two parties.</p> | Refer Section 3 (stakeholder consultation). |
| <p>Comment E5(e) Part E needs to be re-addressed in the context of the deficiencies listed above.</p> | Noted. No mitigation measures are proposed from this audit – refer Section 6 (conclusion). |

1.3 Traffic Audit structure

The structure of the Traffic Audit for the St Mary's Freight Hub is summarised as below:

- **Section 2, Site Details:** Describes the site and summarises the traffic generation and distribution.
- **Section 3, Stakeholder Consultation:** Summarises stakeholder consultation including concerns.
- **Section 4, External Traffic Movements:** Compares and assesses traffic movements post opening, with that forecast in the 2019 Traffic and Transport Assessment (as part of the project's EIS).
- **Section 5, Site Visit:** Summarises site visit details and findings.
- **Section 6, Conclusions:** Summarises the key findings of this Traffic Audit, including the need (or otherwise) of mitigation measures.

1.4 Limitations

This report has been prepared by GHD for Pacific National and may only be used and relied on by Pacific National for the purpose agreed between GHD and Pacific National as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Pacific National arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

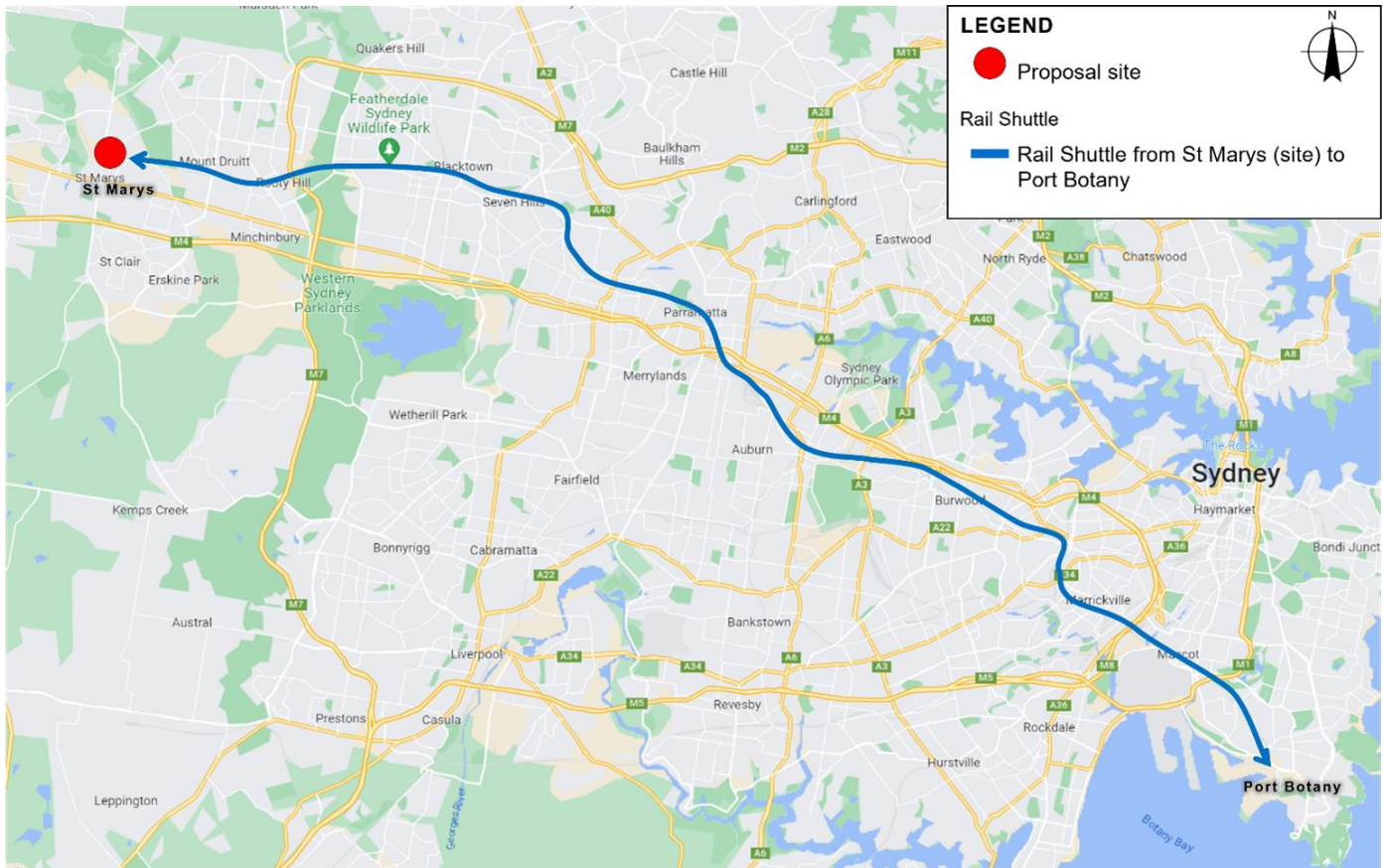


Figure 2.2 St Marys Freight Hub Layout and Access Roads

Source: BG&E

2.2 Operating hours

The St Marys Freight Hub is permitted to operate 24 hours a day, seven days a week. It is however noted that actual (existing) operations are largely premised around existing rail services to the terminal from Monday to Saturday (with limited rail services on Sunday, discussed further).

A summary of existing staffing levels (inclusive of ACFS and Pacific National (PN)) and the indicative staff shifts is provided below in Table 2.1, noting these may vary on a day to day basis, pending train arrival/departure times (refer Table 2.2), which are in turn dependent upon shipping schedules.

Table 2.1 St Marys Freight Hub Operating Hours and Staffing

| Section | ACFS Staff | PN** Staff | Hours | Details |
|--|------------|------------|---|--|
| Permanent staff including administrative/management, reach stacker, forklift operators and other ground staff. | 12 | 1 | 5:00 am-3:00 pm (day shift) | Staff work 2 shifts of approximately 12- hours each. |
| | 2 | 0 | 5:00 pm-finish* (night shift) | |
| Truck drivers starting and ending their shifts at St Marys, train drivers and ground crew. | 22 | 8 | 7 trucks 5:00 am-3:00 pm | Drivers generally work 10 hours per day. |
| | 24 | 6 | 8 trucks 5:00 am -3:00 pm (day shift) 7 trucks 3:00 pm-1:00 am | |

| Section | ACFS Staff | PN** Staff | Hours | Details |
|---------|------------|------------|--|---------|
| | | | 8 trucks 5:00 pm-finish* (night shift) | |
| Total | 60 | 15 | | |

*Finish time depends on train schedules (which vary from day to day), refer Table 2.2.

**Pacific National (PN) staff - not on site all day, train staff typically arrive on site for crew sign on before taking a train out. PN staff numbers vary pending on number of daily rail services.

2.2.1 Train schedule

The train schedules (arrivals and departures) are controlled by the operator of Sydney's metropolitan rail track (Sydney Trains) and is subject to change based on Sydney Trains operational requirements, as well as shipping schedules (inclusive of operational requirements of ACFS). In this regard, it is noted that Sydney Trains would likely have periods in which freight rail paths are not permitted (i.e. during peak rail commuter periods), indicatively between 6:00 am -10:00 am, and 3:00 pm -7:00 pm. As such, train paths for rail freight services are typically available during the "inter-peak" period of 10:00 am to 3:00 pm, and between 6:00 pm and 6:00 am.

The freight rail shuttle schedule over the period Monday 26 June 2023 to Sunday 2 July 2023 between St Mary's and Port Botany is provided below in Table 2.2, and reflects those indicative operating constraints on rail freight access to the Sydney rail metropolitan network.

Additionally, and for the purpose of this audit, traffic surveys and the site visit were timed to coincide with the aforementioned train schedule.

Table 2.2 St Marys Freight Train Schedule (26 June 2023 – 2 July 2023)

| Train name | Train number | Origin | ETD * | Destination | ETA * |
|-----------------------------|--------------|-----------|-------|-------------|-------|
| Monday 26/06/2023 | | | | | |
| St Mary's-1 | 1152 | St Mary's | 04:38 | Botany | 06:06 |
| St Mary's-2 | 1154 | St Mary's | 11:30 | Botany | 13:15 |
| St Mary's-1 | 1157 | Botany | 13:32 | St Mary's | 14:56 |
| St Mary's-3 | 1156 | St Mary's | 18:30 | Botany | 20:30 |
| St Mary's-2 | 1159 | Botany | 18:58 | Botany | 20:26 |
| St Mary's-3 | 1153 | Botany | 23:15 | St Mary's | 00:15 |
| Tuesday 27/06/2023 | | | | | |
| St Mary's-1 | 1150 | St Mary's | 01:30 | Botany | 03:06 |
| St Mary's-2 | 1152 | St Mary's | 05:57 | Botany | 07:25 |
| St Mary's-1 | 1153 | Botany | 10:30 | St Mary's | 11:45 |
| St Mary's-2 | 1155 | Botany | 13:15 | St Mary's | 14:30 |
| Wednesday 28/06/2023 | | | | | |
| St Mary's-3 | 1150 | St Mary's | 04:00 | Botany | 05:15 |
| St Mary's-1 | 1152 | St Mary's | 05:57 | Botany | 07:25 |
| St Mary's-3 | 1153 | Botany | 10:30 | St Mary's | 11:45 |
| St Mary's-2 | 1154 | St Mary's | 11:30 | Botany | 13:15 |
| St Mary's-1 | 1155 | Botany | 13:30 | St Mary's | 13:16 |
| St Mary's-2 | 1157 | Botany | 18:45 | St Mary's | 20:00 |
| Thursday 29/06/2023 | | | | | |
| St Mary's-1 | 1152 | St Mary's | 04:38 | Botany | 07:00 |

| Train name | Train number | Origin | ETD * | Destination | ETA * |
|----------------------------|--------------|-----------|--------|-------------|--------|
| St Mary's-2 | 1154 | St Mary's | 14:00 | Botany | 15:30 |
| St Mary's-1 | 1159 | Botany | 15:00 | St Mary's | 20:26 |
| St Mary's-2 | 1157 | Botany | 22:30 | St Mary's | 23:45 |
| Friday 30/06/2023 | | | | | |
| St Mary's-3 | 1157 | St Mary's | 03:30 | Botany | 05:15 |
| St Mary's-1 | 1152 | St Mary's | 05:57 | Botany | 07:00 |
| St Mary's-3 | 1153 | Botany | 10:00 | St Mary's | 11:15 |
| St Mary's-1 | 1157 | Botany | 13:32 | St Mary's | 14:56 |
| St Mary's-2 | 1156 | St Mary's | 18:30 | Botany | 20:30 |
| St Mary's-3 | 1158 | St Mary's | 21:45 | Botany | 23:00 |
| St Mary's-2 | 1159 | Botany | 23:30 | St Mary's | 00:45 |
| Saturday 01/07/2023 | | | | | |
| St Mary's-3 | 1151 | Botany | 04:30 | St Mary's | 05:45 |
| St Mary's-1 | 1152 | St Mary's | 06:45 | Botany | 08:00 |
| St Mary's-1 | 1157 | Botany | 13:32 | St Mary's | 14:56 |
| Sunday 02/07/2023 | | | | | |
| St Mary's-1** | 1158 | St Mary's | 21:40* | Botany | 06:00* |

* ETD – Estimated time of departure, ETA – Estimate time of arrival

** A rail service also occurs on Sunday on an ad-hoc basis (as required).

Further to the aforementioned scheduled rail services in Table 2.2, additional ad-hoc rail services (six to eight one-way services per week) also occur, resulting in an average of between 18 to 21 one-way rail freight services per week.

3. Stakeholder consultation

As part of the Conditions of Consent, Pacific National (on behalf of ACFS) has consulted with stakeholders on the operations of the St Marys Freight Hub, including the identification of particular concerns. A summary of stakeholder concerns from each of the local government area (Penrith City Council) and Transport for NSW is provided below in Table 3.1 below (with stakeholder emails in Appendix B), including where in this Traffic Audit those stakeholder concerns have been addressed.

Table 3.1 Stakeholder consultation

| Date | Agency | Concern | Addressed in section(s) |
|----------------|----------------------|--|--|
| 20 April 2023 | Penrith City Council | Concern is raised with potential impact to the Glossop Street bridge over the railway corridor which is a Sydney Trains asset. While it is understood that travel of these vehicles will be subject to the appropriate NHVR permits, Council as the applicable roads authority would require the applicant / operator to obtain Sydney Trains approvals for each unique truck combination, length, width, height, mass etc. It is considered critical and necessary that the applicant / operator engage with Sydney Trains to see if these vehicles will be approved for travel on this structure. If they are not approved to travel on this bridge, there may not be appropriate access for these B-Doubles/A-Doubles to access and operate on the site. | Addressed in Section 4.4.5 and Appendix C. |
| 20 April 2023 | Penrith City Council | It is also understood that the SSD determination approved an access route via Forrester Road and Glossop Street towards the Great Western Highway, however Council has not been advised if this was discussed and agreed to by Sydney Trains. Further, it is understood a temporary alternate route has been approved by Blacktown City Council. The adoption of this alternate route has led to numerous phone calls from TfNSW and the NHVR where dozens of complaints were received after 1 night of travel. It is due to this identified impact, that Penrith Council requests that the attached amended Plan(s) be referred to Sydney Trains for review and concurrence to avoid issues that were experienced when the facility initially commenced operations. | Freight access concurrence provided by Sydney Trains for access across the Glossop Street road over rail bridge (via email), as shown in Appendix B. |
| 09 May 2023 | Transport for NSW | TfNSW has reviewed the submitted report and notes that the information submitted in the updated OTAMP addresses the comments made in the TfNSW response dated 15 July 2021. In this regard TfNSW does not have any further comments regarding the implementation of the OTAMP. | TfNSW email (closing out comments) is shown in Appendix B. |
| 08 August 2023 | Penrith City Council | Council has to approach each individual NHVR case which requires a separate approval from Sydney Trains before Council can approve any new NHVR permit. Ideally, ACFS Logistics, as the terminal operator responsible for obtaining these permits, should apply in advance to prevent significant delays in travel due to the internal processes within Sydney Trains for reviews and approval for travel on the Glossop Street bridge frequently causing long review times. Council confirmed this issue as resolved, with no further comments provided by Council's Traffic team. | Addressed in Section 4.4.5 and Appendix C. |

4. External traffic movements

4.1 Overview

This section of the Traffic Audit has been prepared to compare the post-opening traffic generation of the St Marys Freight Hub, including movements on the external road network, as against those forecast in the Traffic and Transport Assessment (as prepared by consultants Bitzios, September 2019), which supported the project's EIS.

The external road network to the site is shown below in Figure 4.1, with key roads accessing the terminal discussed below.

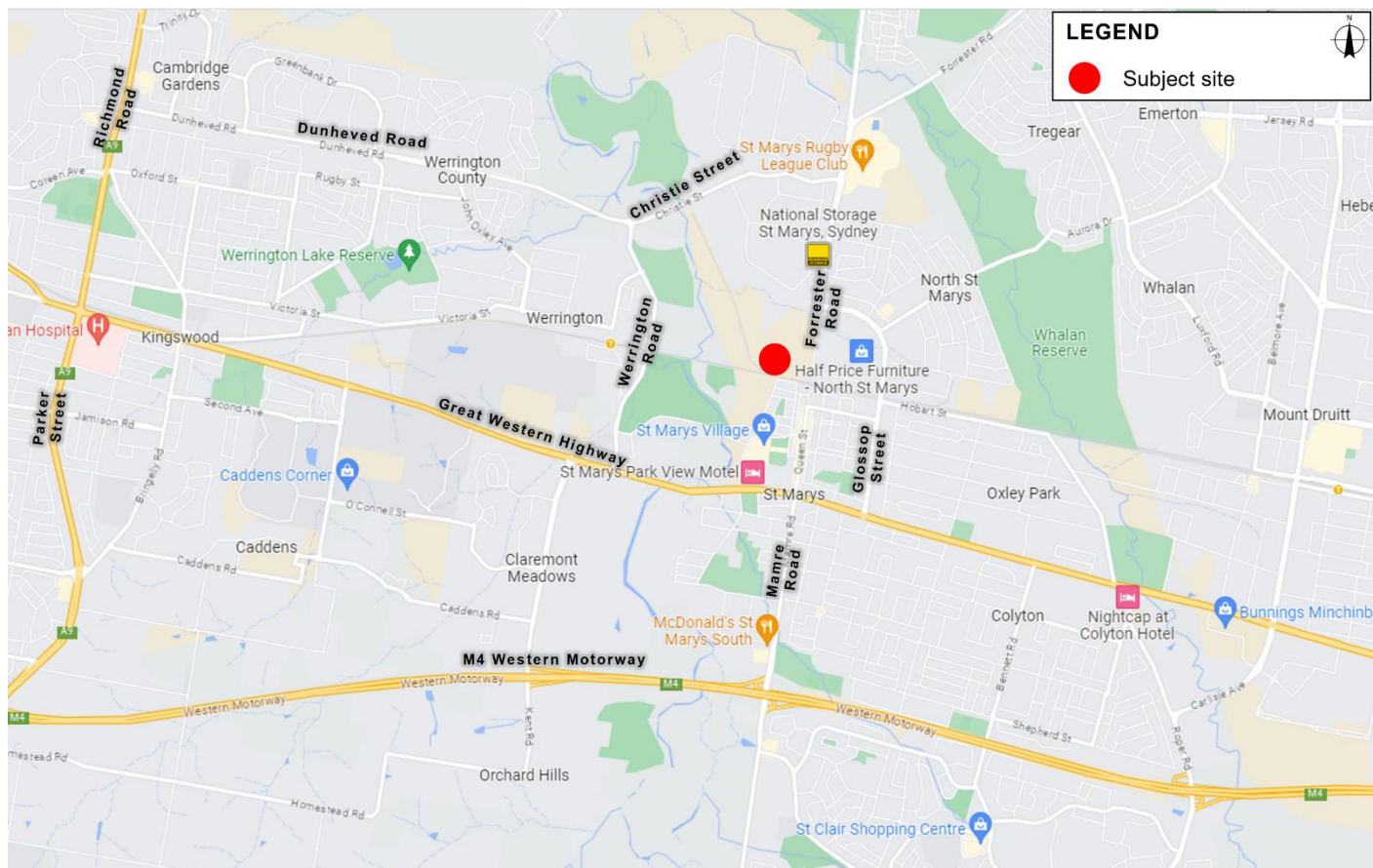


Figure 4.1 Site Location and Study Area

4.1.1 Key roads accessing the terminal

4.1.1.1 Great Western Highway

The Great Western Highway is a state road running east-west linking the Blue Mountains with Sydney. For most of its length it has three lanes in each direction, with two lanes each way between O’Connell Street and Water Street. The sections between O’Connell Street and the South Creek Bridge, and east of Melbourne Street has a 80 km/h speed limit. The rest of this road has a 60 km/h speed limit including the sections near the St Marys terminal. The Great Western Highway is an approved 25-26 metre B-Double route (refer to Section 4.4.5.1) and an A-Double route (refer to Section 4.4.5.2).

4.1.1.2 M4 Western Motorway

The M4 Western Motorway is a state road with three lanes in each direction and running east-west between Strathfield and Glenbrook. Within the study area, interchanges are located at The Northern Road, Kent Road, Mamre Road and Roper Road. The M4 Western Motorway runs parallel to the Great Western Highway, and has a 110 km/h speed limit. The M4 is an approved 25-26 metre B-double route (refer to Section 4.4.5.1) and an A-Double route (refer to Section 4.4.5.2).

4.1.1.3 Parker Street - Richmond Road - The Northern Road

Parker Street is a state-controlled road running north-south, intersecting with the Great Western Highway at Penrith. It continues as Richmond Road in the north and intersects with Dunheved Road. Towards the south, Parker Street continues as The Northern Road and intersects with the M4 Western Motorway. All three roads have a 70 km/h speed limit, and Parker Street has a 40 km/h school zone (8:00 am-9:30 am and 2:30 pm-4:00 pm) between Cox Avenue and Glebe Place. Parker Street has two lanes in each direction between Dunheved Road and Copeland Street, and three lanes in each direction between Copeland Street and Jamison Road. For most of the section of Parker Street within the study area, the carriageways are separated by a wide raised median. All three roads are approved for access by 25-26 m B-Doubles (refer to Section 4.4.5.1) and A-Doubles (refer to Section 4.4.5.2).

4.1.1.4 Mamre Road

Mamre Road is a state road running north-south between the Great Western Highway and Elizabeth Drive, intersecting with the M4 Western Motorway entry/exit ramps. It has two lanes in each direction, a 60 km/h speed limit, and a 40 km/h school zone (8:00 am-9:30 am and 2:30 pm-4:00 pm) extending approximately 60 metres north and south of the Saddington Street intersection. Mamre Road is an approved for access by 25-26 m B-Double route (refer to Section 4.4.5.1) and A-Doubles (refer to Section 4.4.5.2).

4.1.1.5 Glossop Street - Forrester Road

Glossop Street is a regional road running north-south and ending at its intersection with the Great Western Highway in the south. It has two lanes in each direction with a wide raised median. In the north, Glossop Street ends at Forrester Road, which continues north to intersect with Christie Street. Forrester Road is also a regional road with two lanes in each direction and a wide raised median between Glossop Street and Christie Street. Glossop Street and Forrester Road north of Glossop Street has a 60 km/h speed limit, while Forrester Road south of Glossop Street has a 50 km/h speed limit and a 40 km/h school zone (8:00 am-9:30am and 2:30 pm-4:00 pm) north of Harris Street. Glossop Street and Forrester Road are approved for access by 25-26 m B-Double (refer to Section 4.4.5.1) and A-Doubles (refer to Section 4.4.5.2).

4.1.1.6 Dunheved Road - Christie Street

Dunheved Road and Christie Street are both regional roads running east-west, ending at Parker Street in the west. Both roads have one lane in each direction. Dunheved Road has a 70 km/h speed limit, while Christie Street has a 60 km/h speed limit within the industrial areas of St Marys. Dunheved Road and Christie Street are approved for 25-26 m B-Doubles (refer to Section 4.4.5.1).

4.1.1.7 Werrington Road

Werrington Road is a regional road running north-south, intersecting with the Dunheved Road/Christie Street roundabout at its northern end and the Great Western Highway at its southern end. It has one lane in each direction and the southbound approach to the Great Western Highway widens to two lanes. The road has a 70 km/h speed limit between Dunheved Road and Rance Road, a 60 km/h speed limit between Rance Road and the Great Western Highway, and a 40 km/h school zone (8:00 am-9:30 am and 2:30 pm-4:00 pm) between Gipps Street and the Great Western Highway. South of Great Western Highway, Werrington Road continues as a short local road named Reserve Road, terminating at a T-intersection with Putland Street. Werrington Road is approved for 25-26 m B-Doubles (refer to Section 4.4.5.1).

4.2 Traffic survey methodology

4.2.1 Traffic volume

To support the Traffic Audit, traffic surveys were commissioned and undertaken by sub-consultant TTS, for the periods 6:00 am to 10:00 am and 3:00 pm to 7:00 pm on Thursday, 29 June 2023.

The traffic survey coverage (refer Table 4.1) replicated the traffic survey coverage used in the Bitzios (2019) Traffic and Transport Assessment, which was used to support the project's EIS. The traffic survey intersection counts were classified into light vehicles, light trucks, articulated trucks, buses, bicycles, and pedestrians.

Table 4.1 Traffic Count Intersection Survey Locations

| No. | Intersection | Control Type |
|-----|--|--------------|
| 1 | Richmond Road / Dunheved Road | Signalised |
| 2 | Great Western Highway / Parker Street | Signalised |
| 3 | Great Western Highway / Werrington Road / Reserve Road | Signalised |
| 4 | Great Western Highway / Queen Street / Mamre Road | Signalised |
| 5 | Great Western Highway / Carlisle Avenue | Signalised |
| 6 | Mamre Road / M4 Western Motorway (south) | Signalised |
| 7 | Mamre Road / M4 Western Motorway (north) | Signalised |
| 8 | Great Western Highway / Glossop Street | Signalised |
| 9 | Glossop Street / Harris Street | Signalised |
| 10 | Forester Road / Harris Street | Signalised |
| 11 | Forrester Road / Glossop Street | Signalised |
| 12 | Forrester Road / Boronia Street / Christie Street | Signalised |
| 13 | Christie Street / Dunheved Road / Werrington Road | Signalised |

The intersection throughput volumes for the peak one-hour weekday morning (am) and evening (pm) periods are summarised in Figure 4.2. The highest volume morning and evening peak hours identified were as 8:15 am to 9:15 am, and 4:15 pm to 5:15 pm.

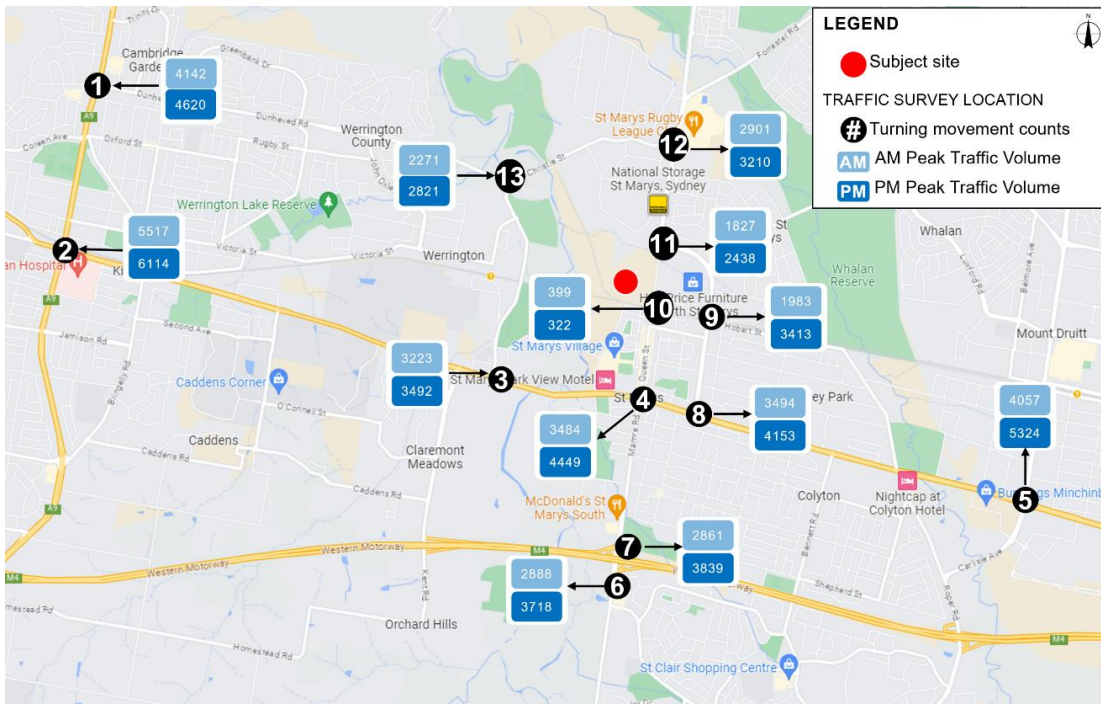


Figure 4.2 Traffic Intersection Volumes' Summary

4.2.2 Weekly traffic survey

A weekly (seven-day) classified traffic survey was also undertaken by sub-consultant TTS on the heavy vehicle access/egress to and from the terminal onto Forrester Road, between 27 June 2023 and 04 July 2023 (as shown in Figure 4.3).



Figure 4.3 Tube Count Survey Location

The average weekday traffic volumes identified from the classified traffic survey at the heavy vehicle access/egress are shown in Figure 4.4 (including that of the site visit day).



Figure 4.4 Average Weekday and Site Visit profile on the terminal heavy vehicle access road

4.2.3 Origin-Destination survey details

A 24-hour Origin-Destination (OD) survey was also undertaken by sub-consultant TTS on Thursday 29 June 2023. The OD survey included seven ‘stations’ consistent with the approved truck routes (refer to Section 4.4.5) accessing the terminal.

The survey data was classified into light vehicles, light trucks, rigid heavy vehicles, articulated heavy vehicles, buses, bicycle, pedestrians and recorded in hourly intervals. The survey recorded the number of vehicles at each station, the number travelling between each station and the travel times of each vehicle.

The OD survey included:

- Number plate and time recorded at each survey site.
- Number plates matched to provide both trip and time matrices.
- Vehicles has been classified in two categories: Lights and Heavies.
- Travel time.

The OD stations are listed below in Table 4.2, and their locations are shown in Figure 4.5.

Table 4.2 OD Stations and their locations

| OD stations | Location |
|-------------|---|
| 1 | Forrester Road site access |
| 2 | Lee Holm Road site access |
| 3 | Dunheved Road, west of Werrington Road |
| 4 | Dunheved Road, west of Werrington Road |
| 5 | Great Western Highway, east of Gipps Street |

| OD stations | Location |
|-------------|--|
| 6 | Mamre Road, between John Street and Lonsdale Street |
| 7 | Great Western Highway, east of Glossop Street |
| 8 | Forrester Road, between Christie Street and Ropes Crossing Road. |
| 9 | Dunheved Road, west of Werrington Road |

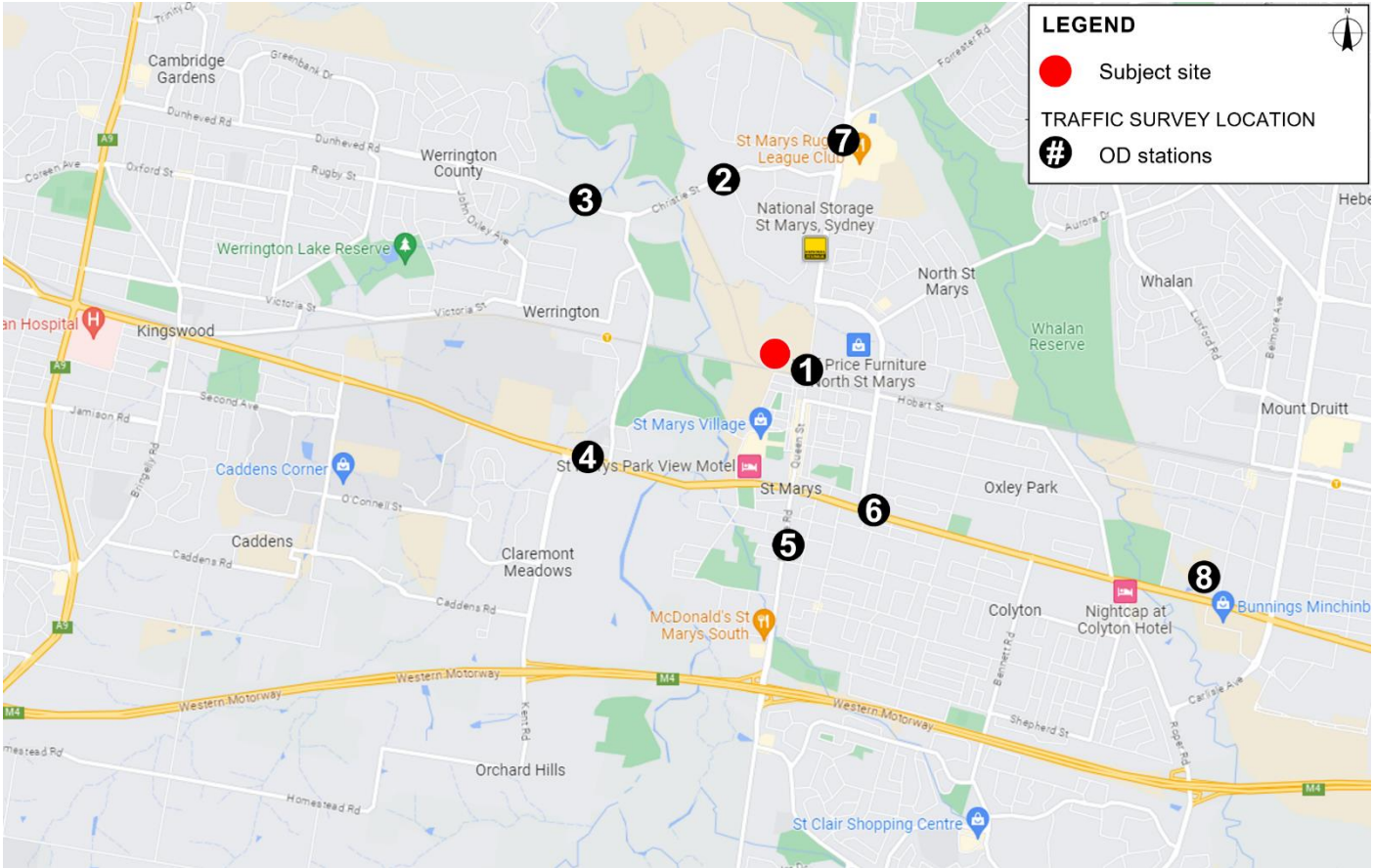


Figure 4.5 Origin-Destination survey data locations

Heavy vehicle movements from the St Marys terminal during the survey is discussed further in Section 4.4.6.

4.3 Light vehicle external road impact

4.3.1 Traffic generation

Traffic surveys undertaken in June 2023 off Lee Holm Road (refer Figure 1.1) identified that light vehicle movements occur outside of the peak hours of the surrounding road network, with shifts starting at 5:00 am (refer Table 2.1), consistent with the Traffic and Transport Assessment (2019).

The 2019 assessment estimated total daily light vehicle traffic (entries and exits) of 124 vehicles on full development (at 301,000 TEUs per year). Current ACFS staffing levels (June 2023) assume up to 60 staff on an operating day (at 50,000 TEUs per year), as compared to 152 staff at full development (301,000 TEU per year).

Figure 4.6 illustrates the hourly (June 2023 surveys) light vehicle movements (entries and exits) at the Lee Holm Road light vehicle access, with Figure 4.7 illustrating the cumulative light vehicle movements at the access, as compared to the projected 124 daily light vehicle movements from the 2019 assessment.

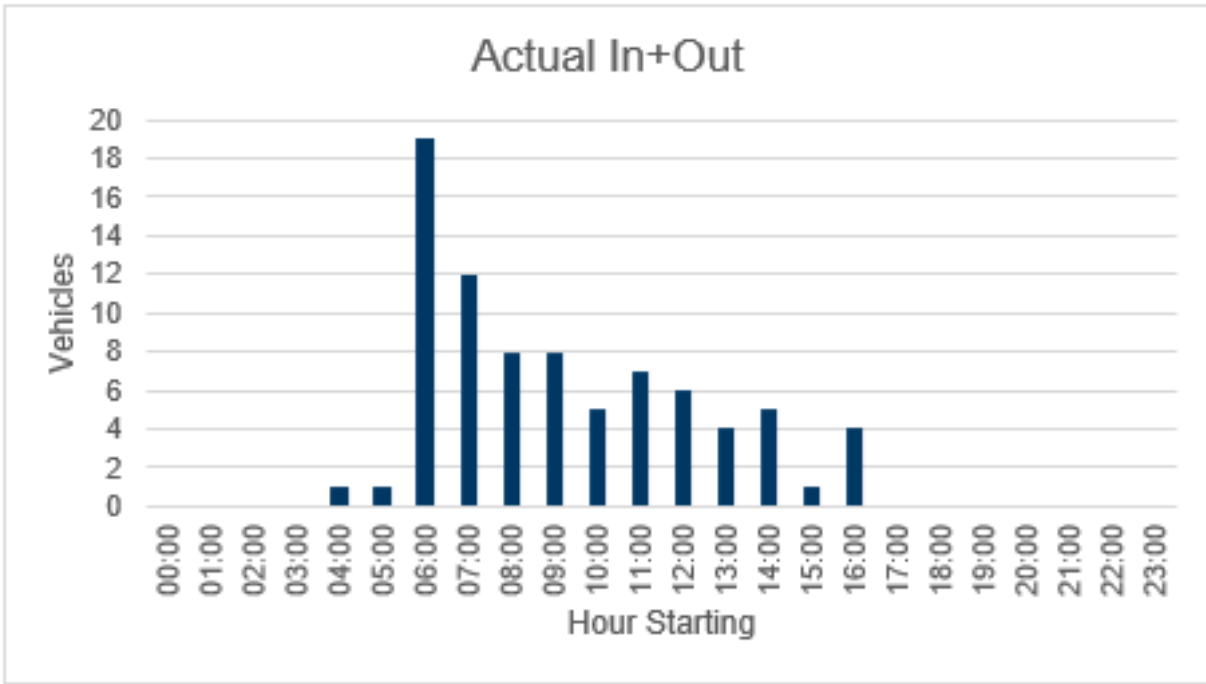


Figure 4.6 Hourly two-way light vehicle movements (June 2023 surveys)

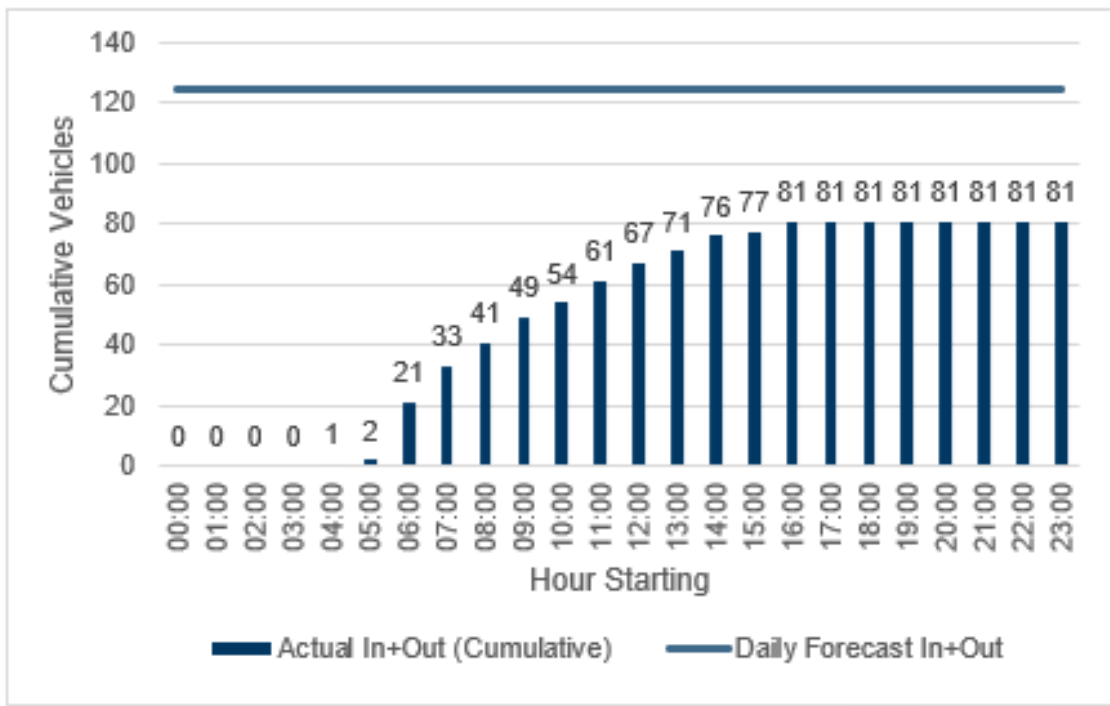


Figure 4.7 Cumulative daily two-way light vehicle movements (June 2023 surveys) as compared to 2019 forecast

From Figure 4.7, cumulative light vehicle movements into the site have not exceeded the 2019 assessment. It is however noted that the rail terminal has yet to reach its full development potential, where current container movements are at 50,000 TEUs annually (as against a full development potential of 301,000 TEUs annually).

4.4 Heavy vehicle external Road impact

4.4.1 Traffic generation

Traffic surveys were undertaken in June 2023 off Forrester Road (refer Figure 1.1) for the heavy vehicle access to the rail terminal.

Figure 4.8 illustrates hourly two-way heavy vehicle movements to the rail terminal on an average weekday (excluding Saturday), which coincided with the day of the site visit. The figure also includes the scheduled freight train arrival and departure times during the day of the site visit.

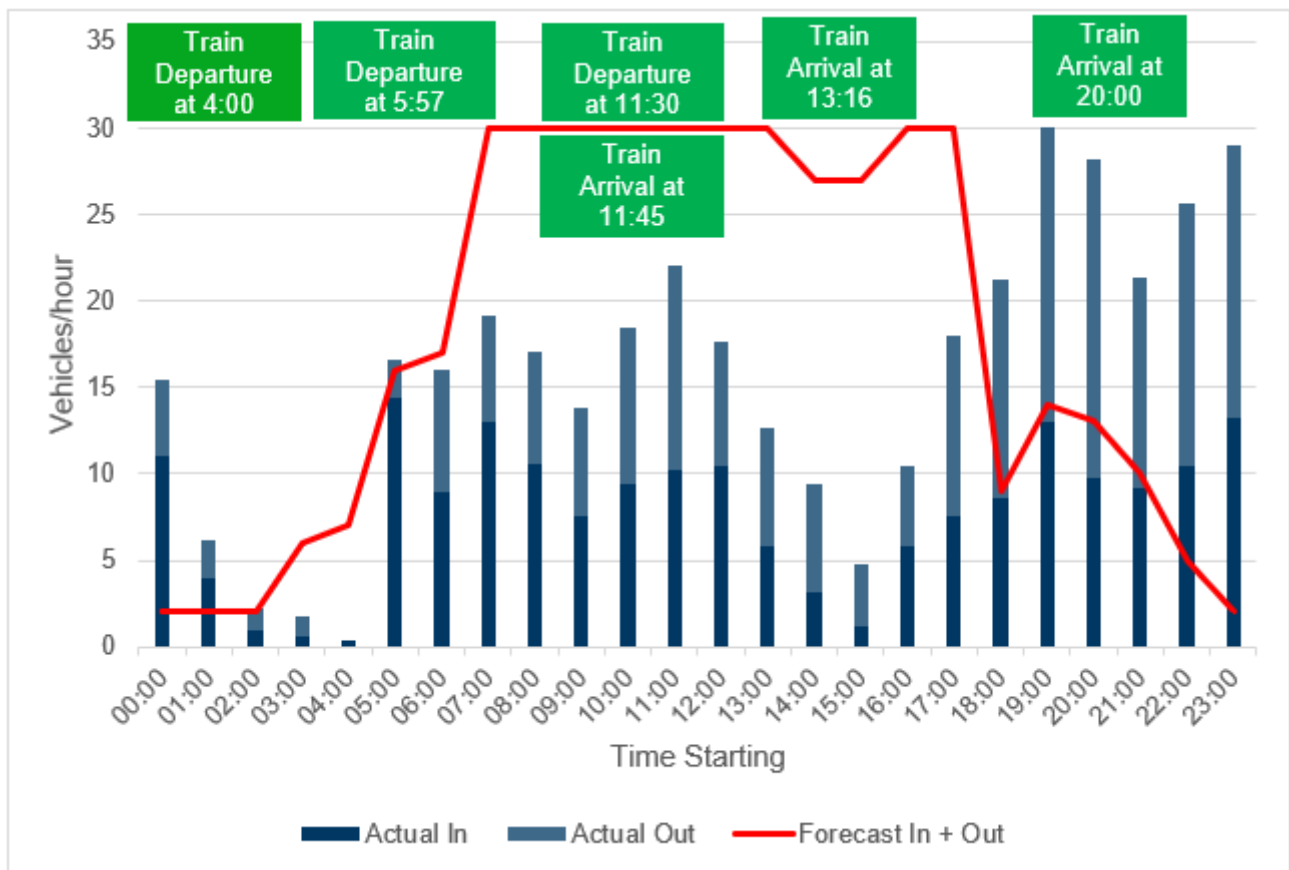


Figure 4.8 Forecast vs Actual Site-Generated Heavy Vehicles

From Figure 4.8, key observations indicate that:

- Between 6:00 am and 5:00 pm, the actual number of two-way truck movements at the access were below the forecast 30 movements (15 in, 15 out) assumed in the 2019 assessment.
- The key difference between the 2019 assessment and the actual movements occurred after 5:00 pm. The 2019 assessment assumed a sharp reduction in hourly truck movements after 5:00 pm, whereas the data revealed more movements than in preceding hours, averaging about 26 two-way heavy vehicle movements per hour between 6:00 pm and midnight, and ten (10) two-way heavy vehicle movements per hour between midnight and 7:00 am.
- When analysing truck movements (routes) between 6:00 pm and midnight movements, the origin destination survey confirms these vehicles are largely using Forrester Road and Glossop Street to access the Great Western Highway, to either travel east or west along the Great Western Highway. It is noted that the roads are gazetted to accommodate these vehicle types and that Penrith City Council has not raised any complaints with ACFS regarding heavy vehicle traffic to/from the terminal at night times.

A limitation of the 2019 assessment was a simplistic assumption that a majority of heavy vehicle movements generally occurred between 6:00am and 6:00pm, irrespective of scheduled freight rail services. The assessment (June 2023) surveys identified that heavy vehicle movements are closely associated with freight rail arrival and departure times, with heavy vehicle movements typically peaking in the hours immediately preceding, and proceeding freight rail arrival and departure times.

The daily two-way heavy vehicle volumes between 27 June 2023 to 3 July 2023 at the Forrest Road access is summarised below in Table 4.3 (including highlighted cells for peak truck movements).

Table 4.3 Daily heavy vehicle two-way volumes (June 2023)

| Day | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------------|------------|------------|------------|------------|------------|-----------|-----------|
| Date | 3/07/2023 | 27/06/2023 | 28/06/2023 | 29/06/2023 | 30/06/2023 | 1/07/2023 | 2/07/2023 |
| AM Peak | 05:00 | 07:00 | 00:00 | 11:00 | 11:00 | 00:00 | 00:00 |
| PM Peak | 12:00 | 19:00 | 22:00 | 19:00 | 20:00 | 20:00 | 12:00 |
| 00:00 | 0 | 20 | 21 | 17 | 19 | 12 | 0 |
| 01:00 | 0 | 11 | 6 | 8 | 6 | 7 | 0 |
| 02:00 | 0 | 4 | 5 | 1 | 1 | 6 | 0 |
| 03:00 | 0 | 6 | 1 | 1 | 1 | 1 | 0 |
| 04:00 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 05:00 | 24 | 14 | 16 | 14 | 15 | 0 | 0 |
| 06:00 | 16 | 18 | 19 | 19 | 8 | 0 | 0 |
| 07:00 | 15 | 23 | 19 | 19 | 20 | 3 | 0 |
| 08:00 | 19 | 14 | 19 | 21 | 12 | 1 | 0 |
| 09:00 | 15 | 10 | 13 | 17 | 14 | 0 | 0 |
| 10:00 | 11 | 17 | 19 | 29 | 16 | 0 | 0 |
| 11:00 | 23 | 20 | 13 | 30 | 24 | 1 | 0 |
| 12:00 | 27 | 20 | 12 | 17 | 12 | 0 | 0 |
| 13:00 | 14 | 15 | 10 | 9 | 15 | 0 | 0 |
| 14:00 | 4 | 12 | 9 | 8 | 14 | 0 | 0 |
| 15:00 | 3 | 2 | 3 | 3 | 13 | 0 | 0 |
| 16:00 | 7 | 9 | 7 | 15 | 14 | 0 | 0 |
| 17:00 | 13 | 21 | 22 | 13 | 21 | 0 | 0 |
| 18:00 | 16 | 15 | 19 | 24 | 32 | 1 | 0 |
| 19:00 | 10 | 31 | 38 | 43 | 28 | 1 | 0 |
| 20:00 | 12 | 26 | 39 | 24 | 40 | 2 | 0 |
| 21:00 | 8 | 11 | 32 | 34 | 22 | 0 | 0 |
| 22:00 | 22 | 25 | 42 | 12 | 27 | 0 | 0 |
| 23:00 | 19 | 27 | 34 | 31 | 34 | 0 | 0 |
| Total | 278 | 373 | 418 | 409 | 408 | 35 | 0 |

From Table 4.3, it is noted that heavy vehicle movements to the site vary on a daily basis ranging from 35 heavy vehicle movements on a Saturday (1 July 2023), to 418 on a Wednesday (28 June 2023) and 278 on a Monday (3 July 2023). As such, the terminal exhibits considerable daily variation in heavy vehicle movements.

With respect to peak hours, heavy vehicle movements exhibit similar variations, with peak hour movements varying from 5:00 am (in the morning peak) to 10:00 am (with hourly movements ranging from 11 to 29 on a weekday), to 10 to 43 during an evening weekday peak, with some heavy vehicle volumes after 10:00 pm (e.g. on Friday 30 June 2023).

These heavy vehicle hourly movements generally follow the varying train schedules (noting variations in train frequencies and arrival/departure times) as summarised in Section 2.2.1. The surveys also illustrate that the impacts of limiting freight rail services to periods outside the rail commuter peak, whereby resulting heavy vehicle movements also occur outside peak hours.

These surveys confirm the limitations in the simplistic assumptions made in the 2019 assessment, which did not consider the limitations in freight rail access to the terminal (due to Sydney Trains operational requirements), as well as daily variations in rail freight service frequencies and their respective schedules (including ad-hoc services).

4.4.2 Heavy vehicle profile

The vehicle classification (two-way) summary for an average weekday identified from the 7-day automatic tube count is shown in Table 4.4.

Table 4.4 Vehicles Classification

| Hour Start | Vehicles Classification Summary | | | | | | | | | Hour Total |
|------------|---------------------------------|---------------|---------------|------|------|------|-----------|-----------|-----|------------|
| | Small Trucks | Medium Trucks | ART3 | ART4 | ART5 | ART6 | BD | DRT | TRT | |
| | | | Semi-trailers | | | | B-Doubles | A-Doubles | | |
| | | | 6 | 7 | 8 | 9 | | 10 | 11 | |
| 0:00 | 4 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 1 | 10 |
| 1:00 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 4 |
| 2:00 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 3:00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 4:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 | 4 | 1 | 1 | 2 | 2 | 0 | 1 | 0 | 0 | 11 |
| 6:00 | 1 | 1 | 1 | 2 | 3 | 0 | 3 | 0 | 0 | 11 |
| 7:00 | 3 | 0 | 2 | 1 | 3 | 1 | 2 | 1 | 0 | 13 |
| 8:00 | 3 | 0 | 1 | 2 | 3 | 1 | 3 | 0 | 0 | 13 |
| 9:00 | 1 | 0 | 1 | 2 | 3 | 0 | 4 | 0 | 0 | 11 |
| 10:00 | 4 | 1 | 2 | 1 | 3 | 0 | 3 | 0 | 1 | 15 |
| 11:00 | 4 | 1 | 2 | 3 | 4 | 1 | 5 | 0 | 1 | 21 |
| 12:00 | 4 | 1 | 1 | 2 | 3 | 1 | 2 | 1 | 1 | 16 |
| 13:00 | 3 | 0 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 9 |
| 14:00 | 2 | 1 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 7 |
| 15:00 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 |
| 16:00 | 1 | 3 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 9 |
| 17:00 | 3 | 3 | 0 | 3 | 2 | 1 | 3 | 1 | 1 | 17 |
| 18:00 | 3 | 3 | 1 | 4 | 2 | 1 | 4 | 1 | 0 | 19 |
| 19:00 | 3 | 4 | 2 | 4 | 3 | 2 | 5 | 2 | 1 | 26 |
| 20:00 | 6 | 4 | 1 | 3 | 3 | 1 | 6 | 0 | 1 | 25 |
| 21:00 | 4 | 2 | 1 | 3 | 2 | 1 | 5 | 1 | 0 | 19 |

| Hour Start | Vehicles Classification Summary | | | | | | | | | Hour Total |
|--------------|---------------------------------|---------------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| | Small Trucks | Medium Trucks | ART3 | ART4 | ART5 | ART6 | BD | DRT | TRT | |
| | | | Semi-trailers | | | | B-Doubles | A-Doubles | | |
| | | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| 22:00 | 5 | 2 | 2 | 2 | 2 | 3 | 6 | 1 | 1 | 24 |
| 23:00 | 8 | 2 | 2 | 2 | 5 | 1 | 7 | 0 | 1 | 28 |
| Total | 69 | 31 | 22 | 42 | 52 | 15 | 67 | 8 | 10 | |

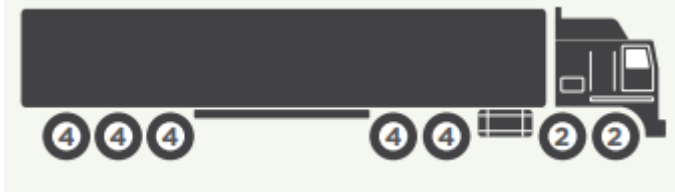
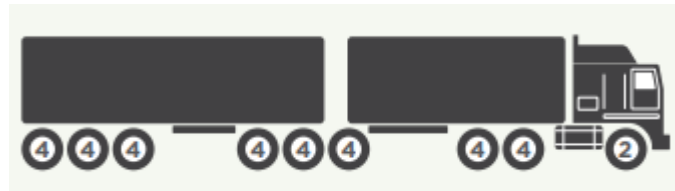
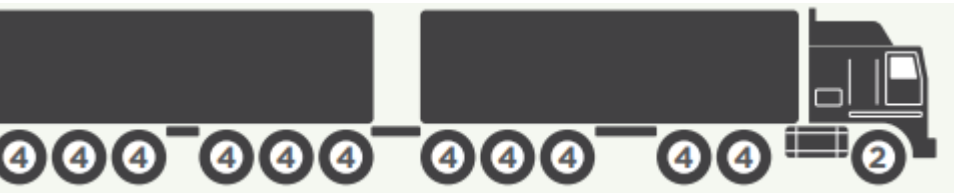
From Table 4.4, it is noted that 61 percent of heavy vehicles accessing the site were semi-trailers, 31 percent of B-Doubles and 8 percent A-Doubles, whereas the 2019 assessment assumed a heavy vehicle composition of 40 percent semi-trailers and 60 percent B-Doubles.

With respect to peak hours, the average morning peak hour for heavy vehicles was 11:00 am – 12:00 pm, with the evening peak hour of 7:00 pm – 8:00 pm, whereas the 2019 assessment assumed a flat heavy vehicle activity peak between 7:00 am and 5:00 pm.

4.4.3 Differences between Semi-trailer, B-Doubles and A-Doubles

The respective dimensions for each of a semi-trailer, B-Double and A-Double which access the rail terminal, including their respective TEU capacity is provided below in Table 4.5.

Table 4.5 Heavy Vehicle Type accessing site

| Vehicle (dimensions in mm) | Key Dimensions |
|---|--|
| Semi-trailer  | <ul style="list-style-type: none"> Length: ≤20.0 meters Forty-foot equivalent unit (FEU) carried: 1 TEU's carried: 2 |
| B-double  | <ul style="list-style-type: none"> Length: ≤26.0 meters FEU carried: 1.5. TEU's carried: 3 |
| A-double  | <ul style="list-style-type: none"> Length: ≤30.0 meters FEU carried: 2 TEU's carried: 4 |

Source: [NSW Heavy Vehicle Chart](#), National Heavy Vehicle Regulator (July 2016 and February 2022).

4.4.4 Heavy vehicle movements

The EIS forecast (2019 assessment) versus actual (June 2023 surveys) of entries and exits for semi-trailers, B-Doubles and A-Doubles at the Forrester Road heavy vehicle access is shown in Table 4.6, including the relative proportion of heavy vehicle types.

Table 4.6 Forecast vs Actual In + Out Counts for Semi-Trailers, B-Doubles, A-Doubles

| Heavy vehicle class | June 2023 surveys | EIS forecast (2019) |
|---------------------|-------------------|-------------------------|
| Semi-Trailers | 131 (61%) | - |
| B-Doubles | 67 (31%) | = |
| A-Doubles | 18 (8%) | - |
| Total | 216 (100%) | 436 (100%) ¹ |

¹ The original 2019 traffic assessment did not specifically identify the indicative heavy vehicle fleet likely to access the site, but was expected to include a mixture of both semi-trailers and B-Doubles.

The following is noted when comparing the total number of heavy vehicle movements identified in the June 2023 surveys as against the Traffic and Transport Assessment (2019):

- June 2023 surveys indicated daily heavy vehicle movements of approximately 50% of EIS projected heavy vehicle movements. It is however noted that the forecast movements in the EIS are predicated on full development (301,000 TEUs annually), as against the current equivalent throughput of 56,000 TEUs annually (average monthly TEU throughput over the 12-month period July 2022 – June 2023).
- June 2023 surveys indicated a high reliance on semi-trailers accessing the terminal (61 percent), as against B-Doubles (31 percent).
- June 2023 surveys indicated eight percent of heavy vehicle movements to the terminal are attributed to A-Doubles, which can carry the equivalent of four TEUs.

Several reasons for the respective difference in heavy vehicle movements (as of the June 2023 surveys) as against the EIS prediction (2019) can be explained as follows:

- A September 2023 (Bitzios, 2023) survey of shipping containers through the terminal identified a higher proportion/reliance (four to one) on forty-foot containers (FEU), over twenty-foot (TEU) containers. As a consequence, B-Double vehicles are less suited to this freight task with increased reliance on either semi-trailers (carrying one FEU) or A-Double/Super B-Double vehicles (carrying two FEUs).
- The rail terminal is at times impacted by track works and insufficient rail services (these occur regularly), for which some container movements to/from the rail terminal subsequently occur by road.
- Trucks entering the rail terminal can be both loaded and empty depending on the freight task.

As such, the EIS likely “under-estimated” the volume of heavy vehicles accessing the site.

The audit identified the dynamic nature of heavy vehicle movements to a rail terminal, including the variable number of weekly rail services (over scheduled rail freight services) to the rail freight terminal, which makes projecting heavy vehicle movements in an EIS challenging.

4.4.5 Heavy vehicle routes

4.4.5.1 B-Double access

Vehicles which exceed the general access overall dimensions as defined in the Heavy Vehicle National Regulation (i.e. a semi-trailer) is considered to be a Restricted Access Vehicle (RAV).

TfNSW designates roads which may accommodate vehicles larger than semi-trailers (i.e. RAVs). Figure 4.9 shows the approved 26-m B-Double network in proximity to the St Marys Freight Hub. Within immediate proximity to the site, gazetted B-Double roads include Forrester Road, Harris Street, Glossop Street, Lee Holm Road, Christie Street and Mamre Road.

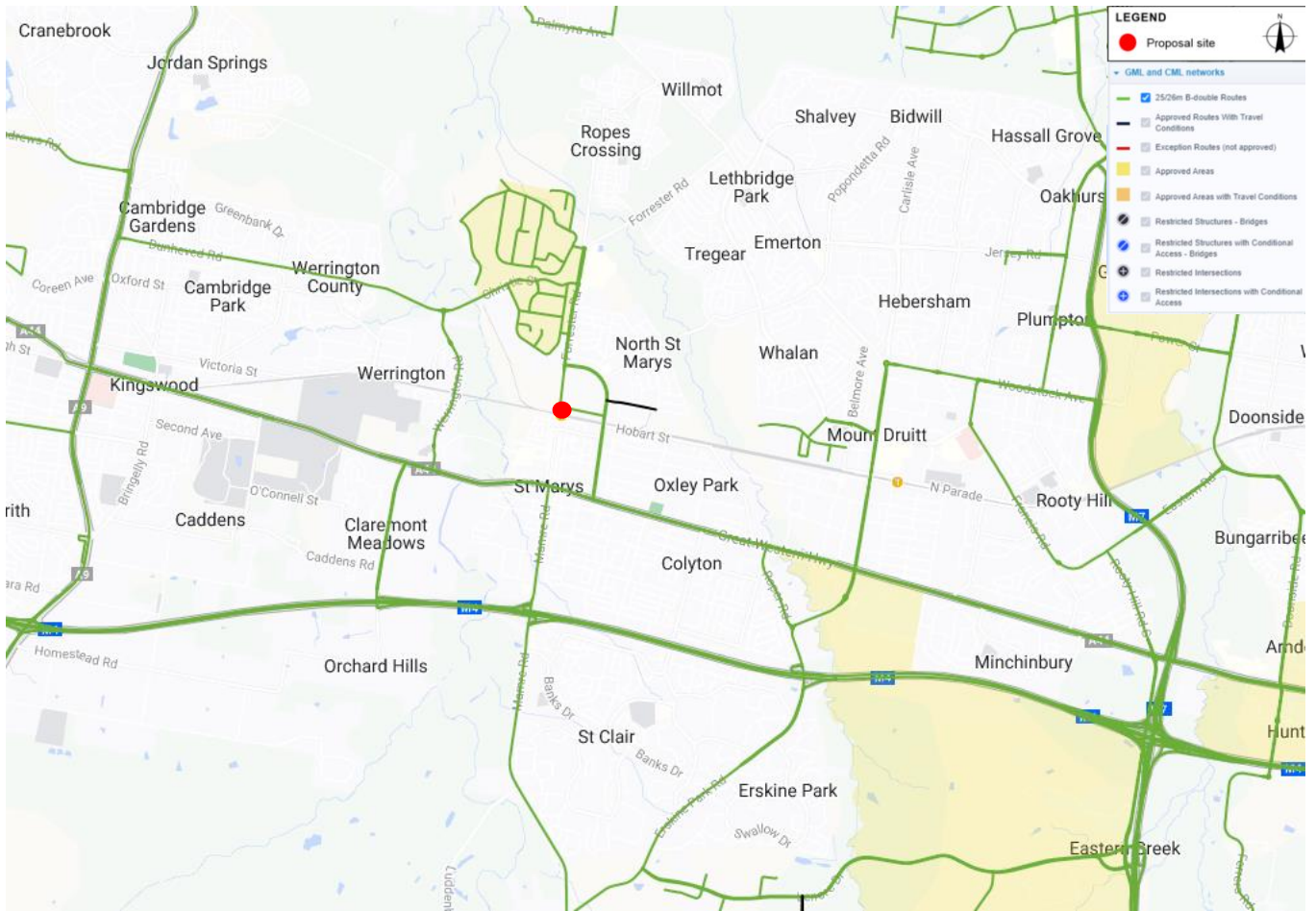


Figure 4.9 Approved heavy vehicle routes for 26m B-Doubles.

Source: NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map (TfNSW, 2023), modified by GHD.

4.4.5.2 A-Double access

Similar to the B-Double access maps (as shown in Figure 4.9), TfNSW has also established network access for larger higher productivity vehicles (A-Doubles) which is provided in Figure 4.10.

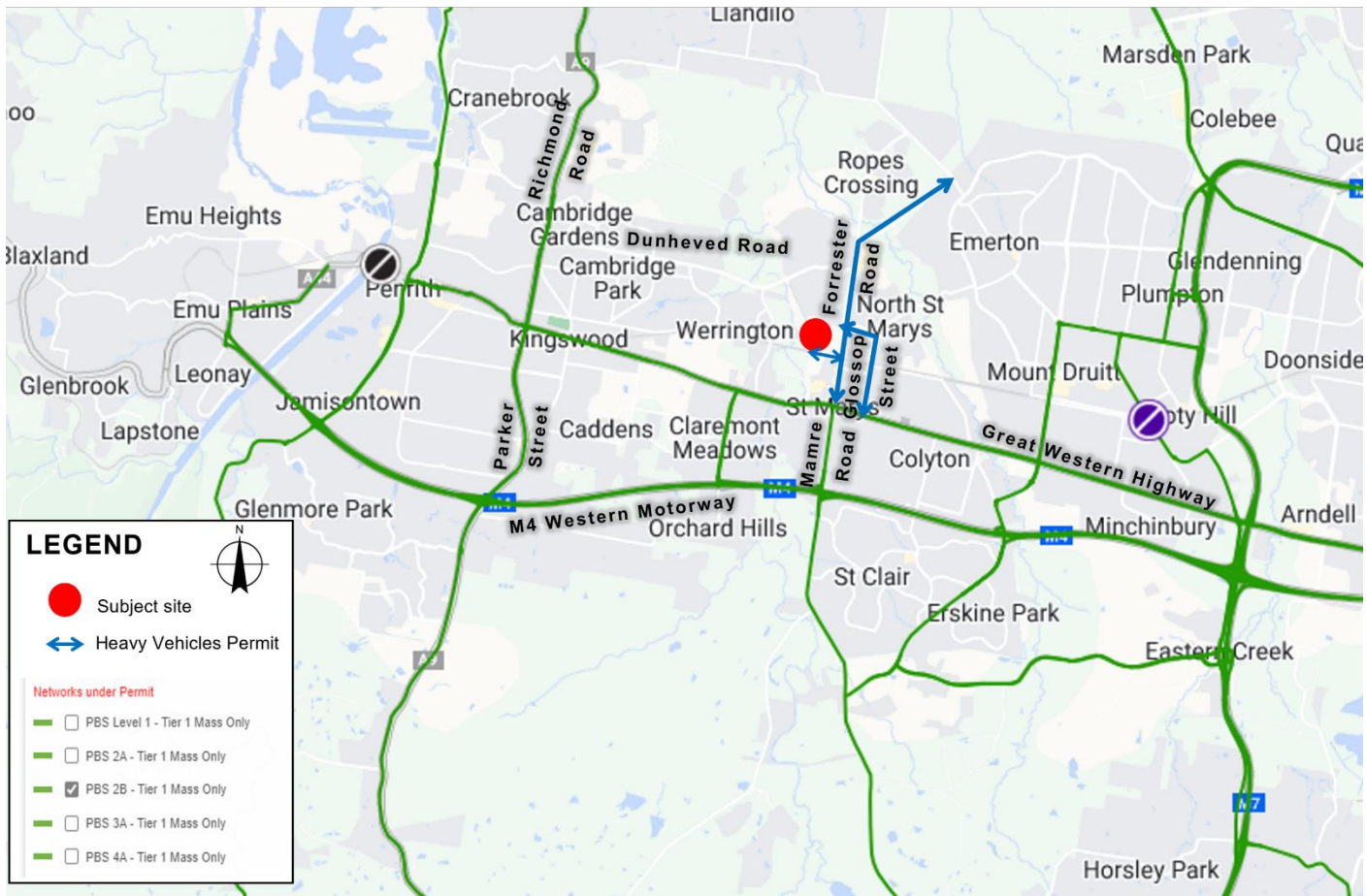


Figure 4.10 Approved heavy vehicle routes for A-Double (PBS 2B – Tier 1 mass only) access

Source: Transport for NSW 2023

From Figure 4.10, TfNSW access mapping do not currently show A-Double access to the St Marys Freight Hub. In the absence of gazetted (mapped) access, heavy vehicle operators may also seek permitted access for high productivity vehicles, including on an individual vehicle basis. ACFS has sought and received nine (9) permits for high productivity vehicle access to the terminal and adjoining roads (including local government roads controlled by Penrith City Council), which provide onward access to the TfNSW A-Double network (as shown in Figure 4.10). These include Forrester Road, Glossop Street (including the Sydney Trains controlled bridge over the railway corridor) and Mamre Road. Summaries of existing permits including heavy vehicle operators, vehicle combinations, access routes and permit periods (including expiry date) is shown in Appendix C.

As such, it appears that all heavy vehicles accessing the site use the permitted/gazetted road network.

4.4.6 Truck-traffic distribution

The forecast and actual AM (8:00 – 9:00 am) and PM (4:30 – 5:30 pm) peak truck trips by Origin Destination pair (for locations see Figure 4.11) are summarised in Table 4.7, whilst the forecast and actual truck trips at night (10:00 pm – 6:00 am) are shown in Table 4.8.

Table 4.7 Forecast vs. Actual Truck-Traffic Volume Distribution, AM, and PM Peak Hours

| Station(s) | Forecast | | | | Actual | | | |
|------------|----------|--------|-------|--------|--------|--------|-------|--------|
| | AM In | AM Out | PM In | PM Out | AM In | AM Out | PM In | PM Out |
| 5 | 13 | 13 | 13 | 13 | 2 | 3 | 0 | 1 |
| 6 | 2 | 2 | 2 | 2 | 4 | 4 | 1 | 7 |

| Station(s) | Forecast | | | | Actual | | | |
|------------|----------|--------|-------|--------|--------|--------|-------|--------|
| | AM In | AM Out | PM In | PM Out | AM In | AM Out | PM In | PM Out |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 15 | 15 | 15 | 15 | 17* | 18* | 16* | 8 |

Note: * The OD survey and site visit identified local delivery of shipping containers to the St Mary's Distributing Centre (88 Forester Road).

From Table 4.7, it is noted that both the forecast (2019 assessment) and actual (June 2023) surveys identified key freight movements to/from the rail terminal to the east along the Great Western Highway and south along Mamre Road. A key discrepancy in the 2019 forecast was the assumption that there would be no local freight movements. The site investigation and OD surveys confirmed local movements of freight vehicles to/from the terminal to local destinations in the immediate study area. An example of this was movements to/from the rail terminal to the adjacent St Marys Distribution Centre at 88 Forrester Road.

Table 4.8 Forecast vs. Actual Truck-Traffic Volume Distribution, 10:00 PM to 6:00 AM

| Station(s) | Forecast | | Actual | |
|------------|----------|-----|--------|-----|
| | In | Out | In | Out |
| 5 | 19 | 19 | 33 | 16 |
| 6 | 3 | 3 | 65 | 50 |
| 3 | 0 | 0 | 1 | 0 |
| 4 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 1 | 0 |
| Total | 22 | 22 | 100 | 66 |

From Table 4.8, it is noted that both the forecast (2019 assessment) and actual (June 2023) surveys identified key freight movements to/from the rail terminal to the east along the Great Western Highway and south along Mamre Road (similar to the commuter peaks). It is however noted that these were higher than forecast, with an additional two heavy vehicles an hour (on average) into the terminal travelling along Mamre Road, and approximately eight heavy vehicles an hour (on average) along the Great Western Highway (in each direction).

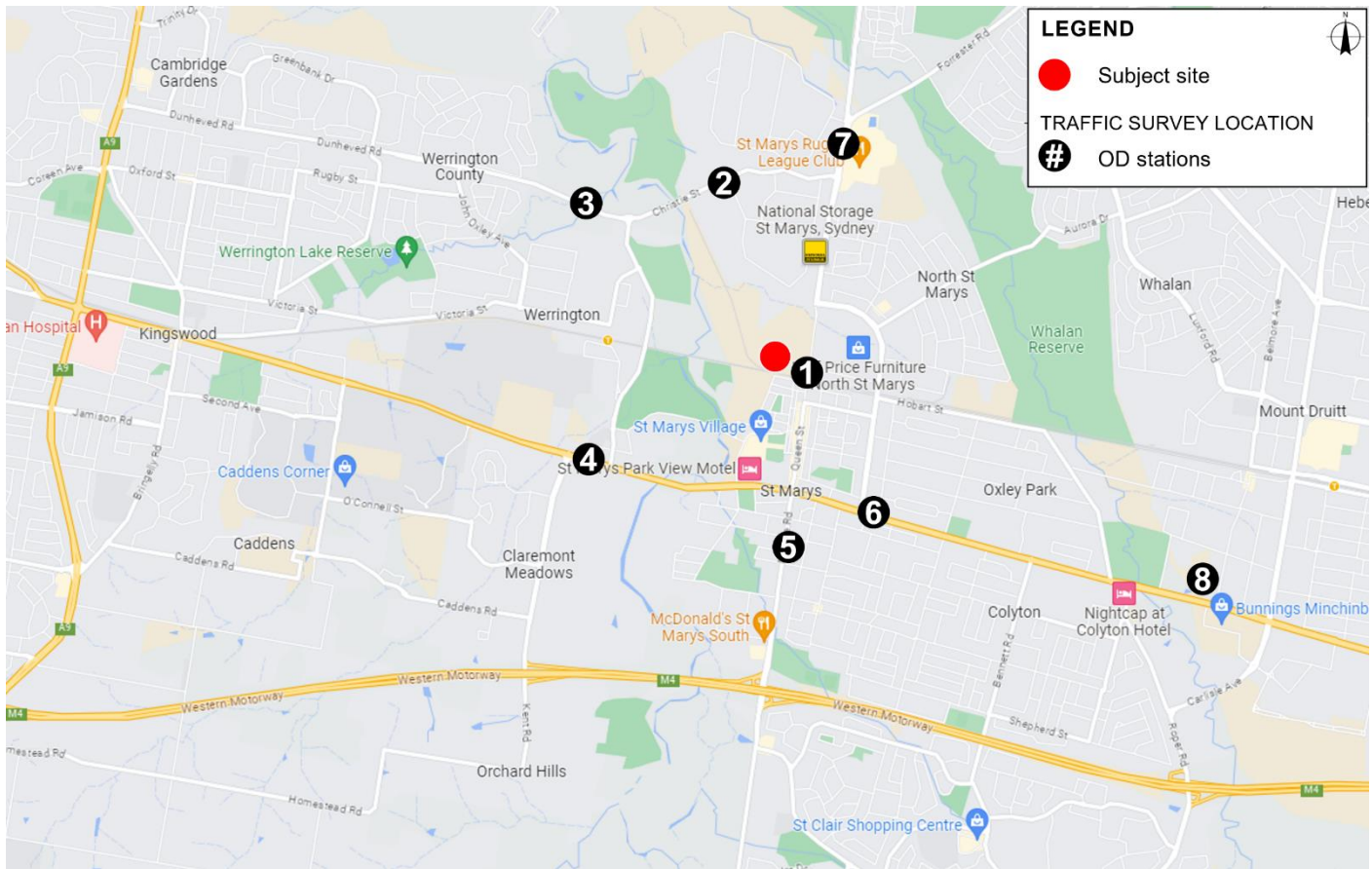


Figure 4.11 Origin-Destination survey station reference map

Key observations from the origin destination surveys indicated:

- Movements east along the Great Western Highway and south along Mamre Road were key origin/destinations, consistent with the 2019 assessment.
- Local freights movements (e.g. within the St Marys industrial precinct) were significant from the June 2023 surveys, which was not considered in the 2019 assessment.
- During the night-time period (10:00 pm to 6:00 am), eight heavy vehicles an hour (on average) were travelling in each direction along the Great Western Highway (east) from the site, which was higher than that forecast in the 2019 assessment.

5. Site visit

A site visit was undertaken on Wednesday 19 July 2023 between 9:00 am and 12:00 pm, to observe light and heavy vehicle movements accessing the terminal, with a particular focus on heavy vehicle movements to/from the Forrester Road access. This site visit was timed to coincide with the scheduled freight train arrivals/departures to/from Port Botany. Observations from the site visit included:

- Nine heavy vehicles were observed leaving the site, including three A-Doubles, one B-Double, and five semi-trailers. Of the nine movements, three occurred between 9:00 am and 10:30 am, and the remaining six occurred between 10:30 am and 12:00 pm, indicating a morning peak after 10:30 am (on that day).
- Several heavy vehicles were followed briefly from the site which confirmed compliance with the gazetted (and permitted) heavy vehicle network. Of those heavy vehicles, two semi-trailers travelled to the adjacent Forrester Distribution Centre (88 Forrester Road), located one block north of the St Marys Freight Hub.
- Two heavy vehicles travelled onto the Great Western Highway (towards Paramatta) via Forrester Road and Glossop Street.
- One heavy vehicle was observed travelling onto Mamre Road via Forrester Road and Glossop Street.
- On the day of site visit, train movements to the terminal were limited due to crewing issues.

Findings from the site visit identified no particular concerns of heavy vehicles accessing the freight terminal.

6. Conclusions

The key findings from the post opening Traffic Audit (based on June 2023 surveys) of the St Marys Freight Hub on reaching the 50,000 TEU annual throughput, as compared to the projections in the 2019 assessment (which is premised on a full development of 301,00 TEUs) are summarised below by vehicle type.

Light Vehicles

- Light vehicles access the terminal at Lee Holm Road mainly between 4:00 am to 4:00 pm, consistent with the 2019 assessment.
- A total of 81 light vehicle movements were recorded at the Lee Holm Road access in June 2023, which is less than the 124 light vehicles forecast in the 2019 assessment. It is nonetheless noted that those light vehicle movements are premised on a TEU throughput of 50,000, as opposed to a full development scenario of 301,000 TEUs from which the 2019 assessment is based.
- The highest hourly movement of light vehicles to the site in the June 2023 surveys was 19 movements, in the period 6:00 am to 7:00 am. These movements fall outside the peak hour for the external road network, and as such would have negligible impact on the road network.

Heavy Vehicles

- During the site visit, all heavy vehicles were observed using gazetted (and permitted) heavy vehicle routes to access/egress the site.
- The June 2023 surveys indicated that heavy vehicle movements to the site closely followed train arrival/departure times, with peak heavy vehicle activity around 11:00 am (in the morning), and peak evening activity between 7:00 pm to 10:00 pm. This varied from the 2019 assessment which assumed most heavy vehicle activity between 7:00 am and 5:00 pm.
- With respect to the increased night-time heavy vehicle movements than forecast (averaging 26 heavy vehicle per hour), the terminal is permitted to operate 24 hours a day, seven days a week. It is also noted the trucks leaving/entering the terminal use gazetted roads to accommodate these vehicle types, and the trafficked roads are largely located in industrial areas (e.g. with other logistics based industries located nearby). Penrith City Council has not raised any complaints with ACFS regarding heavy vehicle traffic to/from the terminal at night times.
- The Origin Destination survey identified a significant portion of freight (truck) movements with origins/destinations within the immediate St Marys precinct (e.g. movements to the adjacent St Marys Distribution Centre at 88 Forrester Road).
- The June 2023 surveys identified 61 percent of heavy vehicles accessing the site were semi-trailers, 31 percent B-Doubles and eight percent A-Doubles.
- A survey of shipping containers through the terminal identified a higher proportion/reliance (four to one) on forty-foot containers (FEU), over twenty-foot (TEU) containers. As a consequence, B-Double vehicles are less suited to this freight task with increased reliance on either semi-trailers (carrying one FEU) or A-Double/Super B-Double vehicles (carrying two FEUs).
- The EIS assumed trucks entering and leaving the site as being full (carrying containers). In practice trucks may arrive empty or full depending on the freight task being undertaken.
- At the time of the 2019 assessment, A-Double vehicle access to the terminal was not foreseen, with the 2019 assessment assuming use of B-Double vehicles.
- Noting the recent introduction of A-Double vehicles to the site (and the operator cost savings associated with these vehicles), it is expected that the proportion of A-Double (or similar) vehicles will increase over time, potentially resulting in fewer heavy vehicle movements. This is particularly relevant where there appears to be a significantly higher proportion of FEUs being transported through the site, for which A-Doubles are well suited for this freight task.

The traffic audit identified significant limitations in the assumptions adopted in the 2019 assessment, which did not consider the dynamic operational nature of rail freight terminal. These include (but are not limited to):

- Rail freight shuttle services to the St Marys Freight Hub are governed by access limitations to the Sydney Metropolitan rail network, which limit services outside of peak hours. As such, rail freight arrivals/departure typically occur in the interpeak, and at night time, between 6:00 pm to 6:00 am. The impact of these train arrival/departure patterns has a direct impact on the timing of heavy vehicle movements to the terminal.
- Rail freight schedules vary from day to day, inclusive of frequencies and times, as well as shipping schedules. In addition to scheduled rail services, there are up to six to eight (one-way) ad hoc rail services per week.
- The rail terminal is at times impacted by track works and insufficient rail services (these occur regularly), for which some container movements to/from the rail terminal subsequently occurs by road.

As such, the EIS likely “under-estimated” the volume of heavy vehicles accessing the site. Further, the audit identified the inherent challenges in estimating heavy vehicle movements to a rail freight terminal. Considering the findings of the audit, the dynamic nature of the operation, and the location of the freight terminal within an industrial precinct (with gazetted freight access), no adverse impacts have been identified which would suggest the need for mitigation measures.

Noting that a further audit will be required once 150,000 TEUs (annual equivalent throughput) has been reached, it is expected that the heavy vehicle fleet, truck volumes and arrival patterns will vary from that observed in June 2023, with potentially an increasing proportion of A-Double (or equivalent) vehicles.

Appendix A

**DPE Appointment Letter dated 07 June
2023**

Mr Rob Woods
Manager Infrastructure Planning
Pacific National
Level 16, 15 Blue Street
North Sydney NSW 2060

07/06/2023

Subject: Appointment of Demelza Scott as Lead Traffic Auditor, and Christophe Steinbach in a supporting role

Dear Mr Woods

I refer to your request dated 30 May 2023 for the Planning Secretary's approval of Ms Demelza Scott as Lead Traffic Auditor and Mr Christophe Steinbach as technical support to Ms Scott, under Condition E5 of SSD-7308.

The Department has reviewed the nominations and information you have provided and is satisfied that Ms Scott is suitably qualified and experienced to be Lead Auditor, and Mr Steinbach is suitably qualified and experienced to provide traffic expertise and support to Ms Scott. Accordingly, I can advise that the Planning Secretary approves the appointment of Ms Scott as Independent Traffic Auditor, assisted by Mr Steinbach.

If you wish to discuss the matter further, please contact Amy Porter at amy.porter@planning.nsw.gov.au.

Yours sincerely

A handwritten signature in black ink, appearing to read "M. Wood".

Acting Team Leader
Infrastructure Management

As nominee of the Planning Secretary

Appendix B

**Agency Consultation Email dated 17 July
2023**

Rob Woods
Manager Infrastructure Planning
Pacific National
361 Industrial Drive
TIGHES HILL NSW 2297

TfNSW Reference: SYD15/01627/15
DPE Reference: SSD 7308 MOD 6

**RE: REVIEW UPDATE OTAMP FOR ST MARY'S FREIGHT HUB
FORRESTER ROAD, ST MARYS**

9 May 2023

Dear Mr Woods,

Reference is made to your email dated 17 April 2023, regarding the updated Operational Traffic and Access Management Plan (OTAMP) which was referred to Transport for NSW (TfNSW) for review and comment.

TfNSW has reviewed the submitted report and notes that the information submitted in the updated OTAMP addresses the comments made in the TfNSW response dated 15 July 2021. In this regard TfNSW does not have any further comments regarding the implementation of the OTAMP.

If you have any further inquiries in relation to this development application Mr Nav Prasad would be pleased to provide further information via email: development.sydney@transport.nsw.gov.au. I hope this has been of assistance.

Sincerely,



Pahee Rathan
Senior Land Use Assessment Coordinator
Planning and Programs Greater Sydney

Kirtika Virdi

From: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>
Sent: Thursday, 6 July 2023 12:51 PM
To: Robert Woods
Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Robert,

Response from Sydney Trains Engineering:

Please find below my record and assessment except vehicle 7. Please counter check with ACFS that it is consistent with their previous approval records as ACFS mentioned "approved".

Vehicle (1) Permit # 159610 VA 7837. Approved Mass 45t – Approved on 18/5/2023 (Danny)

Vehicle (2) Permit # 182081 VA 892 Requested Mass 40t – Approved on 14/6/2023 (Danny)

Vehicle (4) Permit # 257644 VA 6415. Approved weight 79.5t – Approved on 11/4/2023 (Danny)

Vehicle (5) Permit # 355480 VA 7736 Requested weight 57.5t. – Approved on 2/3/2023 (Jorge)

Vehicle (8) Permit # 374769 VA 190815 Requested weight 57.5t – Approved on 13/3/2023 (Jorge)

Vehicle (9) permit 395369 of 69.5t - Referring Mack A and Mercedes A Double approved on 1/2/2023 (Jorge)

Below are new requests and my assessment.

Vehicle (3) Permit # 104204 VA 1135 Requested weight 71t – Approved

Vehicle (6) Permit # 96991 VA 1958 Requested Weight 73t – Not approved

Vehicle (7) Permit # 106590 VA 10474 Approved Weight 79.7t – No previous approval record is found. Inconsistent axle load needs to be clarified for assessment

Finally, to avoid delay of response, it would be helpful if you could coordinate with ACFS and Penrith Council regarding the record handling and details of heavy vehicle provided for assessment. Below are some suggestions for new assessment in future.

- 1. Do not put 2 or more requests in one email sent to Sydney Trains.*
- 2. Case number or permit number is included in subject title instead of using A-Double, Mack A Double, Mercedes A Double or Track Axle, etc.*
- 3. State clear requested total mass of vehicle and check consistent axle spacings and axle loads with clear figure of vehicle details.*

Thanks

Kenneth Amegor

Program Manager – External Interface
Engineering and Maintenance Interface, Asset management
Engineering & Maintenance
Sydney Trains
Transport for NSW

M 0422 005 865 **E** kenneth.amegor@transport.nsw.gov.au

transport.nsw.gov.au

Level 2 West
36-46 George Street
Burwood NSW 2134



I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

Please consider the environment before printing this email.

OFFICIAL

From: Robert Woods <Robert_Woods@pacificnational.com.au>

Sent: Tuesday, 4 July 2023 10:09 AM

To: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Ken,

Attached please find copies of the detailed truck configuration schematics as requested.

Please advise if you require anything further at this time.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

361 Industrial Drive Tighes Hill | NSW | 2297

M +61 437 605 385

E robert_woods@pacificnational.com.au

W pacificnational.com.au



pacificnational

OFFICIAL

From: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Sent: Thursday, June 22, 2023 12:15 PM

To: Robert Woods <Robert_Woods@pacificnational.com.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Robert,

Comments from our Sydney Trains Engineering,

The dimensions of axle spacings are not clear in the sketches.

Can you please provide again?

There are 9 requests in your email. Applications 1, 2, 4, 5 and 8 were responded in previous requests. I am not sure that these requests are requested for renewal or extension. Please clarify.

It would be appreciated if you could coordinate with ACFS not to put all permits in one request in future. It should be one request with permit number or case number in one submission, so it will be helpful for our record tracking.

Thanks

Kenneth Amegor

Program Manager – External Interface
Engineering and Maintenance Interface, Asset management
Engineering & Maintenance
Sydney Trains

Transport for NSW

M 0422 005 865 E kenneth.amegor@transport.nsw.gov.au

transport.nsw.gov.au

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From: Robert Woods <Robert_Woods@pacificnational.com.au>

Sent: Thursday, 15 June 2023 8:07 AM

To: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Ken,

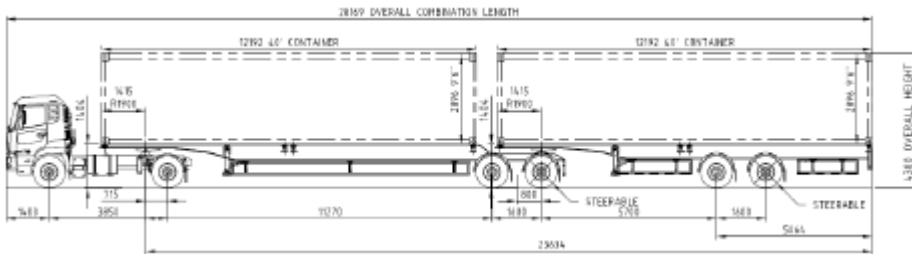
Requested heavy vehicle information provided below.

Attached please also find approval from OSOM with respect to Vehicle 1 below.

Please advise if you require anything further.

Vehicle (1) Permit # 159610 VA 7837. Approved Mass 45t see attached.

| Mass Limits | Level 2 | Axle Group Masses | Level 2 GML |
|-------------------|---------|-------------------|-------------|
| GML (t) | 45.0 | Steer (t) | 6.5 |
| CML (t) | NA | Drive (t) | 9.0 |
| HML (t) | NA | Lead Trailer (t) | 14.5 |
| Bridge Assessment | Tier 1 | Rear Trailer (t) | 15.5 |



Vehicle (2) Permit # 182081 VA 892 Requested Mass 40t. Request is with Syd trains as permit expires 28-06-2023 .

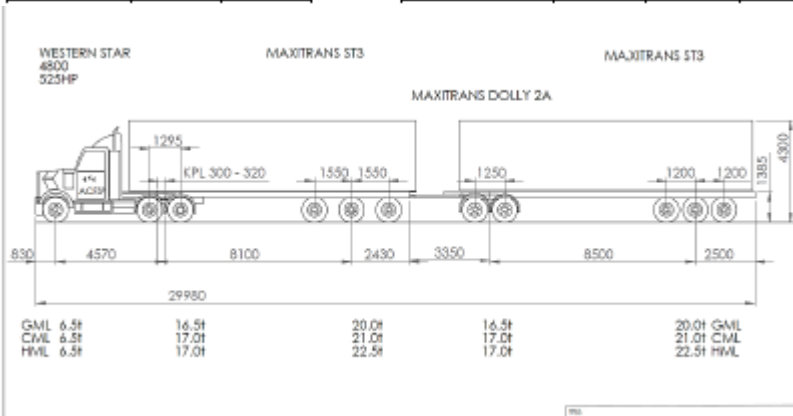
| Mass Limits | Level 3 | Axle Group Masses | Level 3 GML |
|-------------------|---------|-------------------|-------------|
| GML (t) | 40.0 | Steer (t) | 6.0 |
| Bridge Assessment | Tier 1 | Drive (t) | 9.0 |
| | | Lead Trailer (t) | 12.5 |
| | | Rear Trailer (t) | 12.5 |



Vehicle (3) Permit # 104204 VA 1135 Requested weight 71t

| Mass Limits | Level 2 | |
|-------------------|-------------|--------|
| | GML 'A' (t) | 71.7 |
| GML (t) | NA | 79.5 |
| CML (t) | NA | 81.5 |
| HML (t) | NA | 85.0 |
| Bridge Assessment | Tier 1 | Tier 3 |

| Axle Group Masses | Level 2 | | | |
|-------------------|---------|------|------|------|
| | GML 'A' | GML | CML | HML |
| Steer (t) | 6.5 | 6.5 | 6.5 | 6.5 |
| Drive (t) | 14.4 | 16.5 | 17.0 | 17.0 |
| Lead Trailer (t) | 17.8 | 20.0 | 21.0 | 22.5 |
| Dolly (t) | 14.8 | 16.5 | 17.0 | 17.0 |
| Rear Trailer (t) | 18.2 | 20.0 | 21.0 | 22.5 |



Vehicle (4) Permit # 257644 VA 6415. Approved weight 79.5t

Hi Glenn,

As the email did not indicate if approval for HML or GML is requested, we have checked both HML 85.5t and GML 79.5t.

Approval is given for GML 79.5t only as the loading effects of HML is higher than the capacity.

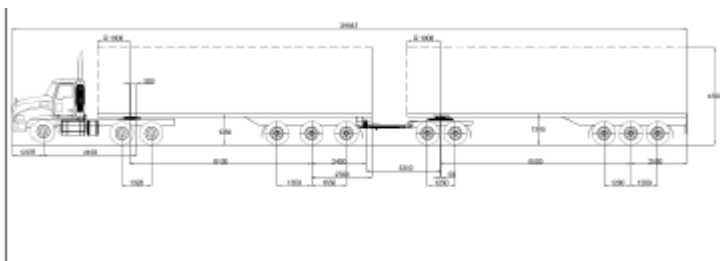
Regards

Danny Romeo

M 0437 710 151 E danny.romeo@transport.nsw.gov.au T [Message me on Teams](#) W transport.nsw.gov.au

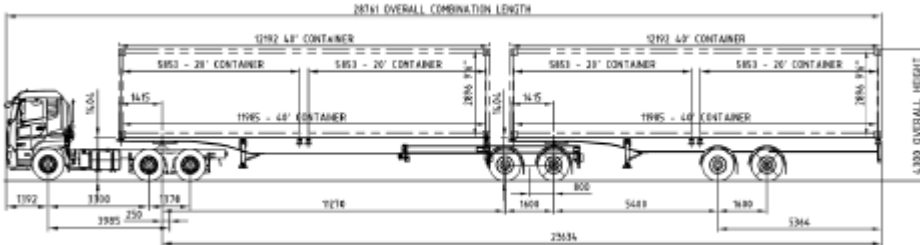
Prime Mover 1 and Trailer Set 1

| Mass Limits | Level 2 | Axle Group Masses | Level 2 | | |
|-------------------|---------|-------------------|---------|------|------|
| | | | GML | CML | HML |
| GML (t) | 79.5 | Steer (t) | 6.5 | 6.5 | 6.5 |
| CML (t) | 81.5 | Drive (t) | 16.5 | 17.0 | 17.0 |
| HML (t) | 85.0 | Lead Trailer (t) | 20.0 | 21.0 | 22.5 |
| Bridge Assessment | Tier 3 | Dolly (t) | 16.5 | 17.0 | 17.0 |
| | | Rear Trailer (t) | 20.0 | 21.0 | 22.5 |



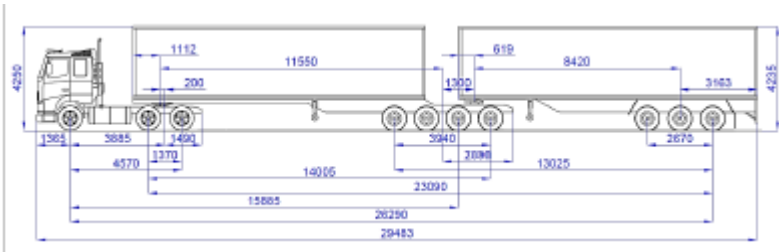
Vehicle (5) Permit # 355480 VA 7736 Requested weight 57.5t.

| Mass Limits | Level 2 | Axle Group Masses | Level 2 | | |
|-------------------|---------|-------------------|---------|------|------|
| | | | GML | CML | HML |
| GML (t) | 56.0 | Steer (t) | 6.5 | 6.5 | 6.5 |
| CML (t) | 57.5 | Drive (t) | 16.5 | 17.0 | 17.0 |
| HML (t) | 57.5 | Lead Trailer (t) | 16.5 | 17.0 | 17.0 |
| Bridge Assessment | Tier 1 | Rear Trailer (t) | 16.5 | 17.0 | 17.0 |



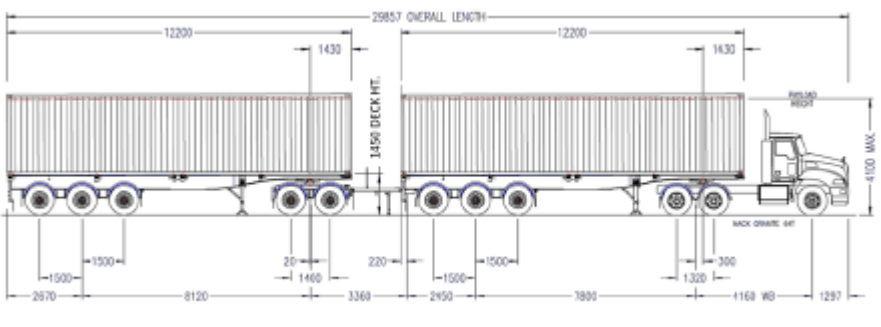
Vehicle (6) Permit # 96991 VA 1958 Requested Weight 73t

| Mass Limits | Level 2 | Axle Group Masses | Level 2 |
|-------------------|---------|-------------------|---------|
| GML (t) | NA | Steer (t) | 6.5 |
| CML (t) | NA | Drive (t) | 17.0 |
| HML (t) | 73.0 | Lead Trailer (t) | 27.0 |
| Bridge Assessment | Tier 3 | Rear Trailer (t) | 22.5 |



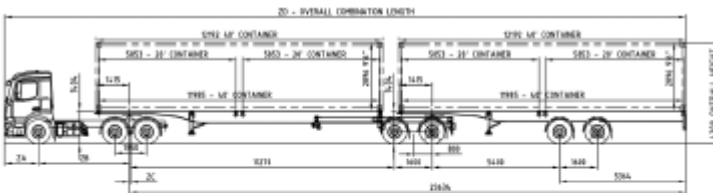
Vehicle (7) Permit # 106590 VA 10474 Approved Weight 79.7t

| Mass Limits | Level 2 | Axle Group Masses | Level 2 | | |
|-------------------|---------|-------------------|---------|-------|-------|
| | | | GML | CML | HML |
| GML (t) | 71.05 | Steer (t) | 6.5 | 6.5 | 6.5 |
| CML (t) | 73.05 | Drive (t) | 15.0 | 15.5 | 15.5 |
| HML (t) | 77.05 | Lead Trailer (t) | 16.65 | 17.65 | 19.15 |
| Bridge Assessment | Tier 1 | Dolly (t) | 16.25 | 16.75 | 16.75 |
| | | Rear Trailer (t) | 16.65 | 17.65 | 19.15 |



Vehicle (8) Permit # 374769 VA 190815 Requested weight 57.5t

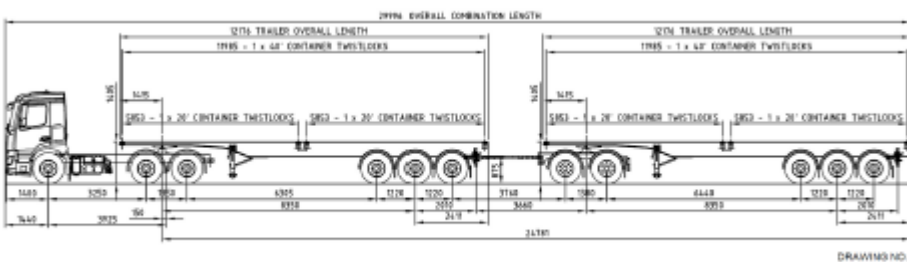
| Mass Limits | Level 2 | Axle Group Masses | Level 2 | | |
|-------------------|---------|-------------------|---------|------|------|
| | | | GML | CML | HML |
| GML (t) | 56.0 | Steer (t) | 6.5 | 6.5 | 6.5 |
| CML (t) | 57.5 | Drive (t) | 16.5 | 17.0 | 17.0 |
| HML (t) | 57.5 | Lead Trailer (t) | 16.5 | 17.0 | 17.0 |
| Bridge Assessment | Tier 1 | Rear Trailer (t) | 16.5 | 17.0 | 17.0 |



| | 2A | 2B | 2C | 2D |
|-------------|------|------|--------------|---------------------|
| PERMIT TYPE | PER | WB | 50 WOOD LEAD | OVERALL COMB LENGTH |
| 1 | 5000 | 3200 | 50 | 29857 |
| 2 | 5000 | 3200 | 50 | 29857 |

Vehicle (9) Permit # 395369 VA 121112 Approved weight 69.7t

| Mass Limits | Level 2 | Axle Group Masses | Level 2 | | |
|-------------------|----------|-------------------|---------|------|------|
| | | | GML | CML | HML |
| GML (t) | 79.5 | Steer (t) | 6.5 | 6.5 | 6.5 |
| CML (t) | 81.5 | Drive (t) | 16.5 | 17.0 | 17.0 |
| HML (t) | 85.0 | Lead Trailer (t) | 20.0 | 21.0 | 22.5 |
| Bridge Assessment | Tier 2/3 | Dolly (t) | 16.5 | 17.0 | 17.0 |
| | | Rear Trailer (t) | 20.0 | 21.0 | 22.5 |



Rob Woods TMIEAust CEngT NER
 Manager Infrastructure Planning

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OFFICIAL

From: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Sent: Tuesday, June 13, 2023 2:23 PM

To: Robert Woods <Robert_Woods@pacificnational.com.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Robert,

Sydney Trains Engineering (ESI) has requested for the following information,

ESI will only assess the loads against the structural capacity of the Glossop street bridge and the approval will be given on structural capacity perspective. Remaining operational issues are to be reviewed by relevant parties.

For us to review the structural impact to the bridges please provide the following:

- 1) List of vehicle requiring approval, 2) Axle spacing for each vehicle, 3) Axle loads at each axle and 4) width of the vehicles.***

Thanks

Kenneth Amegor

Program Manager – External Interface
Engineering and Maintenance Interface, Asset management
Engineering & Maintenance
Sydney Trains
Transport for NSW

M 0422 005 865 E kenneth.amegor@transport.nsw.gov.au

transport.nsw.gov.au

Level 2 West
36-46 George Street
Burwood NSW 2134



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I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

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From: Robert Woods <Robert_Woods@pacificnational.com.au>

Sent: Friday, 9 June 2023 1:19 PM

To: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

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Hi Kenneth,

Just checking to see whether Sydney Trains has completed preparing its consultation feedback with respect to this matter.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

361 Industrial Drive Tighes Hill | NSW | 2297

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E robert_woods@pacificnational.com.au

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OFFICIAL

From: Robert Woods

Sent: Wednesday, May 31, 2023 10:37 AM

To: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Kenneth,

My warmest thanks to yourself, Kieran, Richard and Mohammed for your attendance to my presentation today.

As requested, and based on the response from PCC on the matter, the key main questions that PN requests responses from Sydney Trains on this matter are as follows:

- 1) PN requests Sydney Trains to provide its approval for each unique heavy vehicle combination (**including A-doubles**), including vehicle length, width, height and mass as identified in the St Marys Freight Hub OTAMP and Addendum, each dated 5 April 2023, to traverse the Glossop Street overbridge structure
- 2) PN requests Sydney Trains to advise if it was consulted with respect to the approval of an access route via Forrester Road and Glossop Street towards the Great Western Highway via the determination (ie. development consent) for State Significant Development (SSD) 7308, St Marys Intermodal
- 3) PN requests Sydney Trains to review and, where applicable, provide concurrence for the adoption of the St Marys Freight Hub OTAMP and Addendum, each dated 5 April 2023

Further to comments during my presentation, the only material change to the revised OTAMP is the inclusion of A-double vehicles which were not considered in the original OTAMP prepared as part of pre-development approval submissions.

Section 3 of the OTAMP Addendum provides an overview of the primary differences, where applicable, between the operation of B-doubles and A-doubles along the approved heavy vehicle routes. In summary, the OTAMP identified no increased impact due to the operation of A-doubles when compared to B-doubles and actually indicated a decrease in the total volume of truck movements to and from the terminal as a result of the operation of A-doubles.

I have included a copy of my complete presentation from today for the information of yourself and the other attendees as required.

As discussed, the issue of reinstatement of Sydney Trains access to the rail corridor via the existing security double gates now behind the Colourbond fence along the Forrester Road heavy vehicle access into the terminal is being addressed as part of defect close-out works for the HV Feeder Relocation Works Deed and is being managed separate to the matter of the revised OTAMP.

Please advise if any further information is required at this time in order for Sydney Trains to complete its assessment of the revised OTAMP.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

361 Industrial Drive Tighes Hill | NSW | 2297

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From: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Sent: Monday, 29 May 2023 8:02 AM

To: Robert Woods <Robert_Woods@pacificnational.com.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Robert,

Please set up a Teams Meeting for Wednesday 31 /5/2023 between 9am and 12 noon and I will forward it to relevant Sydney stakeholders. Changes can be made depending on the response.

Thanks

Kenneth Amegor

Program Manager – External Interface
Engineering and Maintenance Interface, Asset management
Engineering & Maintenance
Sydney Trains
Transport for NSW

M 0422 005 865 E kenneth.amegor@transport.nsw.gov.au

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36-46 George Street
Burwood NSW 2134



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From: Robert Woods <Robert_Woods@pacificnational.com.au>

Sent: Monday, 29 May 2023 7:44 AM

To: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Cc: Osman Ulubeli <OSMAN.ULUBELI@transport.nsw.gov.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

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Hi Ken,

Just following up with you to see if you have identified a preferred date and time for the briefing.

My availability this week is looking pretty good generally except for Thursday which has a couple of scheduled meetings between 9 and 11am.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

361 Industrial Drive Tighes Hill | NSW | 2297

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E robert_woods@pacificnational.com.au

W pacificnational.com.au



pacificnational

From: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>

Sent: Monday, May 22, 2023 9:54 AM

To: Robert Woods <Robert_Woods@pacificnational.com.au>

Cc: Osman Ulubeli <OSMAN.ULUBELI@transport.nsw.gov.au>

Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Richard,

Sydney Trains Maintenance Team has advised that it would be beneficial if PN could brief the teams through the documents so that we can accurately review the impact on access to Sydney Trains infrastructure.

A teams meeting can be arranged if ok with you.

Thanks

Kenneth Amegor

Program Manager – External Interface
Engineering and Maintenance Interface, Asset management
Engineering & Maintenance
Sydney Trains

Transport for NSW

M 0422 005 865 **E** kenneth.amegor@transport.nsw.gov.au

transport.nsw.gov.au

Level 2 West
36-46 George Street
Burwood NSW 2134





I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

Please consider the environment before printing this email.

From: Robert Woods <Robert_Woods@pacificnational.com.au>
Sent: Monday, 22 May 2023 9:42 AM
To: Osman Ulubeli <OSMAN.ULUBELI@transport.nsw.gov.au>
Cc: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>
Subject: Re: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

You don't often get email from robert_woods@pacificnational.com.au. [Learn why this is important](#)

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Thanks Osman.

Regards

Rob Woods
Manager Infrastructure Planning
Pacific National

Email: robert_woods@pacificnational.com.au
Mobile: 0437 605 385

From: Osman Ulubeli <OSMAN.ULUBELI@transport.nsw.gov.au>
Sent: Monday, May 22, 2023 9:07:15 AM
To: Robert Woods <Robert_Woods@pacificnational.com.au>
Cc: Kenneth Amegor <KENNETH.AMEGOR@transport.nsw.gov.au>
Subject: RE: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Robert

Yes my colleague Ken Amegor is looking after this, I have copied him in on this email.

Feel free to liaise directly with Ken regarding this issue

Regards,

Osman Ulubeli
Program Manager External Interface
Engineering & Maintenance Interface, Asset Management
Sydney Trains
Transport for NSW

M 0416 27 36 74 E osman.ulubeli@transport.nsw.gov.au
transport.nsw.gov.au

Level 2, 36-46 George Street
Burwood NSW 2134



Transport
for NSW

From: Robert Woods <Robert_Woods@pacificnational.com.au>
Sent: Monday, 22 May 2023 8:06 AM
To: Osman Ulubeli <OSMAN.ULUBELI@transport.nsw.gov.au>
Subject: FW: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Osman,

Following our last discussion on the matter of the request below relating to a request from DPIE to undertake consultation with respect to the amended OTAMP for the St Marys Terminal project, can you please confirm if this query was forwarded onto Ken Amegor to coordinate responses from Sydney Trains to the attached documentation.

The Department has granted PN an extension up to May 31st to provide evidence of all consultation undertaken in accordance with the Conditions of Consent and the response from Sydney Trains is at this time the only outstanding item.

Accordingly, I would appreciate if you could confirm that the request has been forwarded to Ken and whether I should liaise directly with Ken to request progress on the consultation with Sydney Trains.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

361 Industrial Drive Tighes Hill | NSW | 2297

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E robert_woods@pacificnational.com.au

W pacificnational.com.au



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From: Robert Woods
Sent: Thursday, April 20, 2023 2:43 PM

To: OSMAN.ULUBELI@transport.nsw.gov.au

Subject: FW: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Hi Osman,

As part of the conditions of consent for the St Marys Intermodal Terminal, PN is required to consult with the relevant roads authorities with respect to any changes to its Operational Traffic and Access Management Plan (OTAMP).

Following a recent review by the Department of Planning & Environment, PN was requested to review parts of its current plans and address a number of questions relating to the proposal to operate certain heavy vehicle configurations to and from the terminal.

PN has prepared the requested responses and, where required, amended its OTAMP for the terminal and has commenced consultation with Penrith City Council and TfNSW.

Penrith City Council has provided their response in the email thread below and has requested PN to further consult with Sydney Trains with respect to the items raised below.

In order to undertake the requested consultation with Sydney Trains on this matter, we would appreciate if you could provide contact details for the relevant personnel within Sydney Trains with whom PN would need to consult.

We have attached the relevant amended documentation for which the requested consultation in order to determine the correct assignment of this request to the appropriate department within Sydney Trains.

Should you require any further information to assist in the processing of this request, please do not hesitate in contacting the undersigned.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

361 Industrial Drive Tighes Hill | NSW | 2297

M +61 437 605 385

E robert_woods@pacificnational.com.au

W pacificnational.com.au



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From: Gavin Cherry <gavin.cherry@penrith.city>

Sent: Thursday, April 20, 2023 8:50 AM

To: Robert Woods <Robert_Woods@pacificnational.com.au>

Cc: Hamish Dodson <hamish.dodson@penrith.city>; Phil Saverimuttu <Phil.Saverimuttu@penrith.city>

Subject: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Morning Robert,

Council's Traffic Engineering and Asset Management Units have reviewed the documents provided (attached) and made the following comments / concerns / requests in response:-

- Concern is raised with potential impact to the Glossop Street bridge over the railway corridor which is a Sydney Trains asset. While it is understood that travel of these vehicles will be subject to the appropriate NHVR permits, Council as the applicable roads authority would require the applicant / operator to obtain Sydney Trains approvals for each unique truck combination, length, width, height, mass etc. It is considered critical and necessary that the applicant / operator engage with Sydney Trains to see if these vehicles will be approved for travel on this structure. If they are not approved to travel on this bridge, there may not be appropriate access for these B-Doubles/A-Doubles to access and operate on the site.
- It is also understood, that the SSD determination approved an access route via Forrester Road and Glossop Street towards the Great Western Highway, however Council has not been advised if this was discussed and agreed to by Sydney Trains. Further, it is understood a temporary alternate route has been approved by Blacktown City Council. The adoption of this alternate route has led to numerous phone calls from TfNSW and the NHVR where dozens of complaints were received after 1 night of travel. It is due to this identified impact, that Penrith Council requests that the attached amended Plan(s) be referred to Sydney Trains for review and concurrence to avoid issues that were experienced when the facility initially commenced operations.

Should you wish to discuss the above points further, please engage directly with Council's Hamish Dodson, Council's Asset Management – Infrastructure Officer on (02) 4732 7550.

Regards

Gavin

Gavin Cherry
Development Assessment Coordinator
Development Services

E Gavin.Cherry@penrith.city
T +61247328125 | F +612 4732 7958 | M
PO Box 60, PENRITH NSW 2751
www.visitpenrith.com.au
www.penrithcity.nsw.gov.au



From: Robert Woods <Robert.Woods@pacificnational.com.au>
Sent: Monday, April 17, 2023 9:58 AM
To: Gavin Cherry <gavin.cherry@penrith.city>
Subject: St Marys Intermodal SSD-7308 - Request Review of Updated OTAMP

EXTERNAL EMAIL: This email was received from outside the organisation. Use caution when clicking any links or opening attachments.

Hi Gavin,

Thanks for returning my call this morning.

As discussed, I understand from archived correspondence that you were a primary contact at Penrith City Council with respect to the conduct of reviews of the Operational Traffic and Access Management Plan (OTAMP) for the St Marys Intermodal development by Pacific National (PN).

Following implementation of the OTAMP, the Department of Planning & Environment has requested PN to provide further information with respect to a number of matters covered by the OTAMP, particularly with respect to the potential impact of heavy vehicles movements to and from the facility and, where required, amend the OTAMP accordingly to reflect the clarifications.

As part of the Department's request, and further to Conditions of Consent, PN has also been requested to consult with Penrith City Council with respect to the amendments to the OTAMP.

Accordingly, please find attached updated copies of the OTAMP and Traffic and Transport Assessment Addendum for the St Marys Freight Hub for review by Council.

The Department has set a very tight timeframe for submission of responses to the amended documents and so we would appreciate if you could request the reviews to be completed as a matter of priority.

Should you require any further information in the interim, please do not hesitate to contact myself on the details below.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

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 **Consider the environment. Please don't print this e-mail unless really necessary.**

Kirtika Virdi

From: Gavin Cherry <gavin.cherry@penrith.city>
Sent: Thursday, 20 April 2023 8:50 AM
To: Robert Woods
Cc: Hamish Dodson; Phil Saverimuttu
Subject: [External] Penrith Council Response to Updated OTAMP and Amended Traffic Impact Assessment Report - St Mary's Intermodal SSD-7308

Follow Up Flag: Follow up
Flag Status: Flagged

Morning Robert,

Council's Traffic Engineering and Asset Management Units have reviewed the documents provided (attached) and made the following comments / concerns / requests in response:-

- Concern is raised with potential impact to the Glossop Street bridge over the railway corridor which is a Sydney Trains asset. While it is understood that travel of these vehicles will be subject to the appropriate NHVR permits, Council as the applicable roads authority would require the applicant / operator to obtain Sydney Trains approvals for each unique truck combination, length, width, height, mass etc. It is considered critical and necessary that the applicant / operator engage with Sydney Trains to see if these vehicles will be approved for travel on this structure. If they are not approved to travel on this bridge, there may not be appropriate access for these B-Doubles/A-Doubles to access and operate on the site.
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Should you wish to discuss the above points further, please engage directly with Council's Hamish Dodson, Council's Asset Management – Infrastructure Officer on (02) 4732 7550.

Regards

Gavin

Gavin Cherry
Development Assessment Coordinator
Development Services

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www.visitpenrith.com.au
www.penrithcity.nsw.gov.au

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From: Robert Woods <Robert_Woods@pacificnational.com.au>
Sent: Monday, April 17, 2023 9:58 AM

To: Gavin Cherry <gavin.cherry@penrith.city>

Subject: St Marys Intermodal SSD-7308 - Request Review of Updated OTAMP

EXTERNAL EMAIL: This email was received from outside the organisation. Use caution when clicking any links or opening attachments.

Hi Gavin,

Thanks for returning my call this morning.

As discussed, I understand from archived correspondence that you were a primary contact at Penrith City Council with respect to the conduct of reviews of the Operational Traffic and Access Management Plan (OTAMP) for the St Marys Intermodal development by Pacific National (PN).

Following implementation of the OTAMP, the Department of Planning & Environment has requested PN to provide further information with respect to a number of matters covered by the OTAMP, particularly with respect to the potential impact of heavy vehicles movements to and from the facility and, where required, amend the OTAMP accordingly to reflect the clarifications.

As part of the Department's request, and further to Conditions of Consent, PN has also been requested to consult with Penrith City Council with respect to the amendments to the OTAMP.

Accordingly, please find attached updated copies of the OTAMP and Traffic and Transport Assessment Addendum for the St Marys Freight Hub for review by Council.

The Department has set a very tight timeframe for submission of responses to the amended documents and so we would appreciate if you could request the reviews to be completed as a matter of priority.

Should you require any further information in the interim, please do not hesitate to contact myself on the details below.

Rob Woods TMIEAust CEngT NER

Manager Infrastructure Planning

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Appendix C

Heavy Vehicle Permits

Table C.1 Performance Based Standards (PBS) Authorisation Permit

| Vehicle Configuration and description (PBS Vehicle) | Permit Number | Permit Period | | Route |
|---|---------------|------------------|------------------|--|
| | | Start Date | End date | |
| B-double (2-2) | 159610V61 | 19 June 2023 | 20 December 2023 | Approved to operate at GML 45.0t Mamre Road, Orchard Hills to St Marys Great Western Highway, St Marys Glossop Street (St Marys to North St Marys) Forrester Road, North St Marys Destination: 10-38 Forrester Road, North St Marys NSW 2760 Forrester Road, North St Marys Glossop Street (North St Marys to St Marys) Great Western Highway, St Marys Mamre Road, St Marys Western Motorway (St Marys to Eastern Creek) |
| Tandem-Tandem B-Double | 182081V21 | 29 June 2023 | 31 December 2023 | Great Western Highway, (Minchinbury to St Marys] Glossop Street (St Marys to North St Marys) Forrester Road, North St Marys End: 10 Forrester Road, North St Marys NSW 2760 Return via reversal of route |
| A-Double (3-2-3) Glossop Street - The operator must not exceed 20kph when travelling over Glossop St Rail Bridge at North St Marys | 104204V13 | 22 November 2022 | 03 July 2024 | Approved to operate at GML 71.7t Mamre Rd (Orchard Hills - St Marys) Great Western Hwy, St Marys Glossop St (St Marys - North St Marys) Forrester Rd, North St Marys Destination: ARC, 10-38 Forrester Rd, North St Marys NSW 2760 Forrester Rd, North St Marys Glossop St (North St Marys - St Marys) Great Western Hwy, St Marys Mamre Rd, St Marys Western Motorway, (St Marys to Sydney Olympic Park) Approved to operate at HML 85.0t Forrester Rd, (Ropes Crossing - St Marys) |

| Vehicle Configuration and description (PBS Vehicle) | Permit Number | Permit Period | | Route |
|---|---------------|---------------|-------------|--|
| | | Start Date | End date | |
| | | | | Destination: Australian Reinforcing Company, Forrester Rd, St Marys Forrester Rd, (North St Marys - Ropes Crossing) Approved to operate at Restricted Mass of 69.7t Start: Forrester Rd, St Marys NSW 2760 (Entire Length) Forrester Rd, St Marys Glossop St, St Marys Great Western Hwy, (St Marys to Eastern Creek) |
| A-Double (3-2-3) Glossop Street - The operator must not exceed 20kph when travelling over Glossop St Rail Bridge at North St Marys | 257644V16 | 12 May 2023 | 06 Dec 2023 | Mamre Rd (St Clair - St Marys) Great Western Hwy, St Marys Glossop St, St Marys Destination: Intersection of Great Western Hwy and Glossop St, St Marys NSW 2760 Great Western Hwy, St Marys Great Western Hwy Exit, St Marys Mamre Rd, St Marys Western Motorway, (St Marys - Homebush West) Approved to operate at HML 85.0t Forrester Rd, (Ropes Crossing - St Marys) Destination: The Australian Reinforcing Company, Forrester Rd, St Marys NSW 2760 Forrester Rd (St Marys - Ropes Crossing) Approved to operate at a Restricted Mass of 68.0t Start: Forrester Rd, St Marys NSW 2760 (Entire Length) Forrester Rd, North St Marys Glossop St (North St Marys - St Marys) Great Western Hwy (St Marys - Eastern Creek) Approved to operate at GML 71.0t Start: Intersection of Great Western Hwy and Glossop St, St Marys NSW 2760 Glossop Street, (St Marys - North St Marys) Forrester Rd, North St Marys End: St Marys Intermodal Hub, Forrester Rd, North St Marys NSW 2760 |

| Vehicle Configuration and description (PBS Vehicle) | Permit Number | Permit Period | | Route |
|--|---------------|-----------------|------------------|---|
| | | Start Date | End date | |
| | | | | Return via reversal of route |
| B-Double (2-2) | 355480V76 | 28 July 2023 | 03 February 2024 | <p>Approved to operate at HML 57.5t</p> <p>Start: PBS Level 2B HML Network, Great Western Highway, St Marys NSW 2760 Glossop Street, (St Marys - North St Marys) Forrester Road, North St Marys End: Intersection of Harris Street and Forrester Road, North St Marys NSW 2760</p> <p>No return trip permitted.</p> <p>Approved to operate at HML 57.5t</p> <p>Start: 38 Forrester Road, North St Marys NSW 2760 Forrester Road, North St Marys Glossop Street, (North St Marys - St Marys) End: PBS Level 2B HML Network, Great Western Highway, St Marys NSW 2760</p> <p>Return via reversal of route</p> |
| Quad-Tri B-Double | 96991V35 | 27 October 2022 | 26 October 2023 | <p>Approved to operate at HML 73.0 t</p> <p>Mamre Rd, (Orchard Hills - St Marys) Great Western Hwy, St Marys Glossop St, (St Marys - North St Marys) Forrester Rd, North St Marys Destination: ARC, 10-38 Forrester Rd, North St Marys NSW 2760 Forrester Rd, North St Marys Glossop St, (North St Marys - St Marys) Great Western Hwy, St Marys Mamre Rd, St Marys Western Motorway, (St Marys - Sydney Olympic Park)</p> <p>Approved to operate at HML 73.0 t</p> <p>Mamre Rd, (St Clair - St Marys) Great Western Hwy, St Marys Destination: Intersection of Great Western Hwy and Glossop St, St Marys NSW 2760 Great Western Hwy, St Marys Mamre Rd, St Marys Western Motorway, (St Marys - Sydney Olympic Park)</p> |

| Vehicle Configuration and description (PBS Vehicle) | Permit Number | Permit Period | | Route |
|---|---------------|------------------|----------------|--|
| | | Start Date | End date | |
| | | | | <p>Mamre Rd, (Orchard Hills - St Marys) Great Western Hwy, St Marys</p> <p>Destination: Intersection of Great Western Hwy and Glossop St, St Marys NSW 2760 Great Western Hwy, St Marys Mamre Rd, St Marys Western Motorway, (St Marys - Sydney Olympic Park) Approved to operate at HML 73.0t</p> <p>Start: Intersection of Glossop St and Forrester Rd, North St Marys NSW 2760 Forrester Rd, [North St Marys - St Marys] Christie St, St Marys Destination: 77-79 Christie St, St Marys NSW 2760 Christie St, St Marys Forrester Rd, [St Marys - North St Marys] End: Intersection of Glossop St and Forrester Rd, North St Marys NSW 2760 Approved to operate at HML 73.0t Forrester Rd, [Ropes Crossing - St Marys] Destination: Australian Reinforcing Company, Forrester St, St Marys NSW 2760 Forrester Rd, [North St Marys - Ropes Crossing] Forrester Rd, [Lethbridge Park - St Marys] End: Forrester Rd, St Marys NSW 2760 (Entire Length) Approved to operate at a Restricted Mass of 66.35t Start: 4 Forrester Rd, St Marys NSW 2760 Forrester Rd, [St Marys - North St Marys] Glossop St, St Marys Great Western Hwy, [St Marys - Eastern Creek]</p> |
| A-Double (3-2-3) Glossop Street - The operator must not exceed 20kph when travelling over Glossop St Rail Bridge at North St Marys | 106590V191 | 10 February 2023 | 07 August 2023 | <p>Approved to operate at GML 71.25 t Mamre Rd, [Orchard Hills - St Marys] Western Hwy, St Marys</p> |

| Vehicle Configuration and description (PBS Vehicle) | Permit Number | Permit Period | | Route |
|--|---------------|---------------|----------|---|
| | | Start Date | End date | |
| | | | | <p>End: Intersection of Glossop St and Great Western Hwy, St Marys NSW 2760</p> <p>No return trip permitted.</p> <p>Approved to operate at GML 71.25t</p> <p>Start: Intersection of Glossop St and Great Western Hwy, St Marys NSW 2760</p> <p>Great Western Hwy, St Marys Mamre Rd, St Marys</p> <p>Western Motorway, [St Marys - Homebush West]</p> <p>Approved to operate at HML 85.0t</p> <p>Forrester Rd, [Willmot - St Marys]</p> <p>End: The Australian Reinforcing Company, Forrester Rd, St Marys NSW 2760</p> <p>Approved to operate at HML 85.0t</p> <p>Start: The Australian Reinforcing Company, Forrester Rd, St Marys NSW 2760</p> <p>Forrester Rd, [St Marys - Willmot]</p> <p>Approved to operate at HML 85.0t</p> <p>Forrester Rd, [Lethbridge Park - St Marys]</p> <p>End: Forrester Rd, St Marys NSW 2760 (Entire Length)</p> <p>Approved to operate at a Restricted Mass of 45.0t</p> <p>Start: PBS Level 2B GML and CML Tier 1 (HP) Network, Great Western Hwy, St Marys NSW 2760</p> <p>Glossop St, (St Marys - North St Marys)</p> <p>Forrester Rd, (North St Marys - St Marys)</p> <p>End: Rail Terminal, Forrester Rd, St Marys NSW 2760</p> <p>Return via reversal of route.</p> <p>Approved to operate at a Restricted Mass of 79.7t</p> <p>Start: Forrester Rd, St Marys NSW 2760 (Entire Length)</p> <p>Forrester Rd, (St Marys - North St Marys)</p> <p>Glossop St, (North St Marys - St Marys)</p> <p>Great Western Hwy, (St Marys - Eastern Creek)</p> |

| Vehicle Configuration and description (PBS Vehicle) | Permit Number | Permit Period | | Route |
|--|---------------|------------------|-------------------|---|
| | | Start Date | End date | |
| B-Double (2-2) | 374769V91 | 24 July 2023 | 07 September 2023 | <p>Approved to operate at HML 57.5t</p> <p>Start: PBS Level 2B HML Network, Great Western Hwy, St Marys NSW 2760</p> <p>Glossop St, (St Marys - North St Marys)</p> <p>Forrester Rd, North St Marys</p> <p>End: St Marys Station, Forrester Rd, North St Marys NSW 2760</p> <p>Return via reversal of route</p> |
| A-Double (3-2-3) | 395369V85 | 03 February 2023 | 14 August 2023 | <p>Approved to operate at CML 81.5t</p> <p>Mamre Rd, (Orchard Hills - St Marys)</p> <p>Great Western Hwy, St Marys</p> <p>Glossop St, St Marys</p> <p>Destination: Intersection of Great Western Hwy and Glossop St, St Marys NSW</p> <p>Great Western Hwy, St Marys</p> <p>Mamre Rd, St Marys</p> <p>Western Motorway, (St Marys - Homebush West)</p> <p>Approved to operate at HML 85.0t</p> <p>Forrester Rd, [Willmot - St Marys]</p> <p>End: The Australian Reinforcing Company, Forrester Rd, St Marys NSW 2760</p> <p>Return via reversal of route.</p> <p>Approved to operate at CML 81.5t</p> <p>Start: The Australian Reinforcing Company, Forrester Rd, St Marys NSW 2760</p> <p>Forrester Rd, [St Marys - Willmot]</p> |

Appendix D

Traffic Survey Data

Site Site Access

Direction

[Back to Site Summary Page](#)

| Day Date | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday | 7 days | | Weekday | | Weekend | |
|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------|----------------|------------|----------------|------------|----------------|
| | 3/07/2023 | 27/06/2023 | 28/06/2023 | 29/06/2023 | 30/06/2023 | 1/07/2023 | 2/07/2023 | Total | Average | Total | Average | Total | Average |
| AM Peak PM Peak | 05:00 12:00 | 07:00 19:00 | 00:00 19:00 | 10:00 19:00 | 07:00 19:00 | 00:00 19:00 | 00:00 12:00 | N/A N/A | 00:00 19:00 | N/A N/A | 07:00 19:00 | N/A N/A | 00:00 19:00 |
| 00:00 | 0 | 20 | 19 | 17 | 21 | 14 | 0 | 91 | 14 | 77 | 14 | 14 | 10 |
| 01:00 | 0 | 10 | 10 | 6 | 7 | 7 | 0 | 40 | 5 | 33 | 6 | 7 | 5 |
| 02:00 | 0 | 4 | 5 | 2 | 2 | 5 | 0 | 18 | 1 | 13 | 1 | 5 | 4 |
| 03:00 | 0 | 5 | 1 | 1 | 2 | 1 | 0 | 10 | 1 | 9 | 1 | 1 | 1 |
| 04:00 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 |
| 05:00 | 22 | 15 | 13 | 13 | 13 | 0 | 0 | 76 | 9 | 76 | 12 | 0 | 0 |
| 06:00 | 13 | 14 | 16 | 17 | 6 | 1 | 0 | 67 | 9 | 66 | 12 | 1 | 1 |
| 07:00 | 16 | 23 | 15 | 18 | 22 | 2 | 0 | 96 | 12 | 94 | 17 | 2 | 2 |
| 08:00 | 17 | 14 | 17 | 16 | 13 | 1 | 0 | 78 | 8 | 77 | 13 | 1 | 1 |
| 09:00 | 14 | 7 | 12 | 12 | 9 | 0 | 0 | 54 | 7 | 54 | 9 | 0 | 0 |
| 10:00 | 10 | 16 | 16 | 24 | 16 | 0 | 0 | 82 | 11 | 82 | 16 | 0 | 0 |
| 11:00 | 19 | 19 | 15 | 23 | 19 | 2 | 0 | 97 | 11 | 95 | 17 | 2 | 2 |
| 12:00 | 22 | 21 | 11 | 18 | 12 | 0 | 0 | 84 | 9 | 84 | 14 | 0 | 0 |
| 13:00 | 15 | 11 | 9 | 9 | 16 | 1 | 0 | 61 | 7 | 60 | 12 | 1 | 1 |
| 14:00 | 5 | 9 | 8 | 8 | 8 | 0 | 0 | 38 | 4 | 38 | 7 | 0 | 0 |
| 15:00 | 4 | 2 | 3 | 4 | 12 | 0 | 0 | 25 | 1 | 25 | 5 | 0 | 0 |
| 16:00 | 4 | 7 | 7 | 17 | 14 | 0 | 0 | 49 | 6 | 49 | 8 | 0 | 0 |
| 17:00 | 10 | 17 | 16 | 12 | 21 | 0 | 0 | 76 | 9 | 76 | 15 | 0 | 0 |
| 18:00 | 15 | 13 | 18 | 23 | 24 | 1 | 0 | 94 | 12 | 93 | 16 | 1 | 1 |
| 19:00 | 8 | 25 | 38 | 38 | 29 | 2 | 0 | 140 | 23 | 138 | 28 | 2 | 2 |
| 20:00 | 13 | 23 | 36 | 21 | 28 | 2 | 0 | 123 | 17 | 121 | 22 | 2 | 2 |
| 21:00 | 7 | 11 | 29 | 28 | 20 | 0 | 0 | 95 | 12 | 95 | 18 | 0 | 0 |
| 22:00 | 20 | 21 | 31 | 9 | 29 | 0 | 0 | 110 | 14 | 110 | 19 | 0 | 0 |
| 23:00 | 14 | 24 | 23 | 24 | 28 | 0 | 0 | 113 | 16 | 113 | 22 | 0 | 0 |
| Total | 248 | 333 | 368 | 360 | 371 | 39 | 0 | 1719 | 218 | 1680 | 304 | 39 | 32 |
| % Heavy | 74.60% | 76.88% | 75.27% | 74.72% | 70.35% | 66.67% | 0.00% | 74.11% | | 74.29% | | 66.67% | |

Site Site Access

Direction

Day

[Back to Site Summary Page](#)

| Hour Start | Vehicles Classifications | | | | | | | | | | | | |
|------------|--------------------------|-----|-----|-----|----|------|------|------|------|----|-----|-----|----|
| | SV | SVT | TB2 | TB3 | T4 | ART3 | ART4 | ART5 | ART6 | BD | DRT | TRT | UC |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 12:00 AM | 4 | 1 | 4 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 01:00 AM | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 02:00 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 03:00 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 AM | 3 | 0 | 2 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 06:00 AM | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 07:00 AM | 4 | 1 | 2 | 0 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |
| 08:00 AM | 3 | 1 | 2 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 |
| 09:00 AM | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 10:00 AM | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 1 | 0 |
| 11:00 AM | 3 | 0 | 2 | 0 | 0 | 2 | 2 | 3 | 1 | 0 | 0 | 0 | 0 |
| 12:00 PM | 2 | 1 | 3 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 01:00 PM | 3 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 02:00 PM | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 03:00 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:00 PM | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 3 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 |
| 06:00 PM | 3 | 0 | 2 | 1 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 |
| 07:00 PM | 4 | 1 | 3 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 0 |
| 08:00 PM | 3 | 0 | 5 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 0 |
| 09:00 PM | 2 | 0 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 0 |
| 10:00 PM | 3 | 1 | 4 | 0 | 0 | 1 | 2 | 2 | 2 | 0 | 1 | 0 | 0 |
| 11:00 PM | 2 | 0 | 5 | 1 | 0 | 1 | 1 | 3 | 1 | 0 | 0 | 0 | 0 |
| Summary | 56 | 9 | 50 | 6 | 8 | 16 | 27 | 34 | 10 | 2 | 4 | 6 | 0 |

Site Site Access

Direction ▼

[Back to Site Summary Page](#)

Day ▼

AM Peak 7:00 AM

PM Peak 7:00 PM

| Vehicle Classification Summary | | | | | | |
|--------------------------------|----------------|--------------|---------------|--------------|--------------|------------|
| Hour Start | Light Vehicles | Small Trucks | Medium Trucks | Large Trucks | Unclassified | Hour Total |
| | (1-2) | (3) | (4-5) | (6-12) | (13) | Total |
| 0:00 | 5 | 4 | 0 | 3 | 0 | 12 |
| 1:00 | 2 | 1 | 0 | 2 | 0 | 5 |
| 2:00 | 1 | 0 | 0 | 1 | 0 | 2 |
| 3:00 | 1 | 0 | 0 | 0 | 0 | 1 |
| 4:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 | 3 | 2 | 1 | 3 | 0 | 9 |
| 6:00 | 3 | 1 | 0 | 4 | 0 | 8 |
| 7:00 | 5 | 2 | 0 | 6 | 0 | 13 |
| 8:00 | 4 | 2 | 0 | 5 | 0 | 11 |
| 9:00 | 3 | 1 | 0 | 3 | 0 | 7 |
| 10:00 | 3 | 3 | 0 | 5 | 0 | 11 |
| 11:00 | 3 | 2 | 0 | 8 | 0 | 13 |
| 12:00 | 3 | 3 | 1 | 4 | 0 | 11 |
| 13:00 | 3 | 2 | 0 | 3 | 0 | 8 |
| 14:00 | 2 | 1 | 0 | 2 | 0 | 5 |
| 15:00 | 1 | 1 | 0 | 0 | 0 | 2 |
| 16:00 | 1 | 1 | 2 | 2 | 0 | 6 |
| 17:00 | 3 | 2 | 1 | 5 | 0 | 11 |
| 18:00 | 3 | 2 | 2 | 5 | 0 | 12 |
| 19:00 | 5 | 3 | 2 | 10 | 0 | 20 |
| 20:00 | 3 | 5 | 2 | 8 | 0 | 18 |
| 21:00 | 2 | 3 | 2 | 6 | 0 | 13 |
| 22:00 | 4 | 4 | 0 | 8 | 0 | 16 |
| 23:00 | 2 | 5 | 1 | 6 | 0 | 14 |
| Summary | 65 | 50 | 14 | 99 | 0 | 228 |

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

From: 0:00
 To: 23:59 All Vehicles

| | 1Entry | 1Exit | 2Entry | 2Exit | 3EB | 3WB | 4EB | 4WB | 5NB | 5SB | 6EB | 6WB | 7NB | 7SB | Total D |
|---------|--------|-------|--------|-------|------|-------|-------|-------|------|-------|-------|-------|-------|-------|---------|
| 1Entry | 0 | 94 | 0 | 0 | 1 | 1 | 1 | 0 | 27 | 33 | 81 | 71 | 7 | 5 | 321 |
| 1Exit | 77 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 23 | 31 | 92 | 66 | 6 | 5 | 304 |
| 2Entry | 0 | 0 | 0 | 78 | 5 | 8 | 1 | 12 | 0 | 18 | 10 | 4 | 20 | 7 | 163 |
| 2Exit | 0 | 0 | 35 | 0 | 3 | 25 | 5 | 13 | 3 | 22 | 14 | 8 | 28 | 15 | 171 |
| 3EB | 1 | 1 | 10 | 7 | 0 | 4462 | 632 | 1734 | 431 | 719 | 920 | 879 | 3565 | 1763 | 15124 |
| 3WB | 1 | 0 | 6 | 3 | 3500 | 0 | 673 | 608 | 240 | 303 | 456 | 297 | 1654 | 578 | 8319 |
| 4EB | 0 | 0 | 9 | 5 | 586 | 1772 | 0 | 4159 | 568 | 1370 | 4376 | 1826 | 1277 | 768 | 16716 |
| 4WB | 0 | 0 | 3 | 1 | 721 | 858 | 4872 | 0 | 686 | 590 | 1669 | 771 | 897 | 434 | 11502 |
| 5NB | 41 | 31 | 19 | 16 | 408 | 1098 | 680 | 1994 | 0 | 3901 | 1946 | 866 | 1914 | 1011 | 13925 |
| 5SB | 25 | 17 | 9 | 3 | 224 | 410 | 432 | 538 | 2624 | 0 | 457 | 724 | 798 | 333 | 6594 |
| 6EB | 72 | 61 | 9 | 4 | 268 | 799 | 618 | 1609 | 495 | 589 | 0 | 3350 | 733 | 555 | 9162 |
| 6WB | 96 | 70 | 25 | 19 | 692 | 1592 | 2210 | 4645 | 650 | 1931 | 3490 | 0 | 2822 | 1466 | 19708 |
| 7NB | 1 | 0 | 16 | 12 | 630 | 1655 | 446 | 842 | 387 | 998 | 750 | 660 | 0 | 5050 | 11447 |
| 7SB | 1 | 0 | 39 | 30 | 1917 | 4323 | 997 | 1684 | 916 | 1986 | 1644 | 1238 | 5664 | 0 | 20439 |
| Total O | 315 | 274 | 180 | 178 | 8956 | 17004 | 11568 | 17839 | 7050 | 12491 | 15905 | 10760 | 19385 | 11990 | |

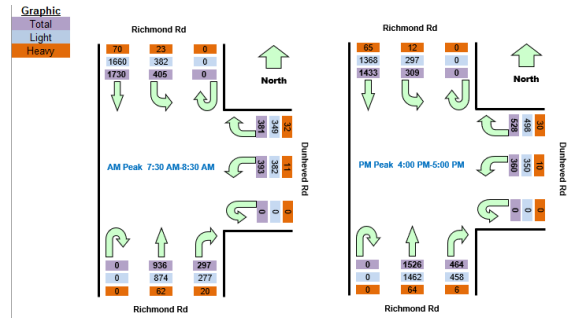
DRAFT

Intersection of Dunheved Rd and Richmond Rd, Pen

GPS: -33.74233, 150.71585
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: Penrith
 Customer: GHD

North: Richmond Rd
 East: Dunheved Rd
 South: Richmond Rd
 West: N/A

Survey Period: AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak: AM: 7:30 AM-8:30 AM
 PM: 4:00 PM-5:00 PM



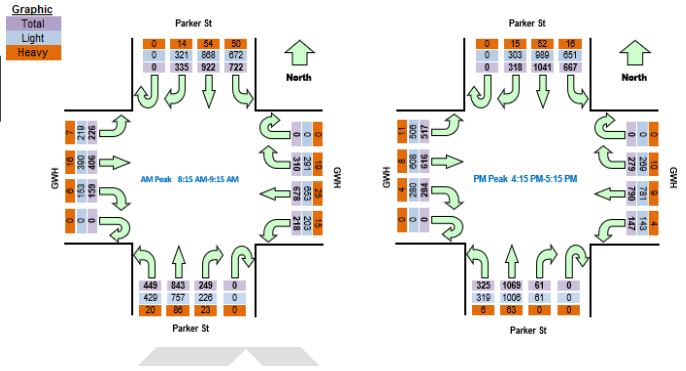
| All Vehicles | | | | | | | | | | | | |
|--------------|------------|-------------------------|-----|-----|------------------------|-----|-----|-------------------------|-----|-----|--------------|------|
| Time | | North Approach Richmond | | | East Approach Dunheved | | | South Approach Richmond | | | Hourly Total | |
| Period Start | Period End | U | SB | L | U | R | L | U | R | NB | Hour | Peak |
| 6:00 | 6:15 | 0 | 351 | 61 | 0 | 36 | 63 | 0 | 34 | 144 | 3092 | |
| 6:15 | 6:30 | 0 | 347 | 54 | 0 | 44 | 61 | 0 | 51 | 177 | 3248 | |
| 6:30 | 6:45 | 0 | 333 | 64 | 0 | 68 | 70 | 0 | 46 | 210 | 3376 | |
| 6:45 | 7:00 | 0 | 388 | 83 | 0 | 55 | 76 | 0 | 44 | 232 | 3624 | |
| 7:00 | 7:15 | 0 | 376 | 94 | 0 | 71 | 61 | 0 | 48 | 195 | 3745 | |
| 7:15 | 7:30 | 0 | 363 | 86 | 0 | 60 | 84 | 0 | 55 | 214 | 3913 | |
| 7:30 | 7:45 | 0 | 460 | 88 | 0 | 85 | 92 | 0 | 76 | 238 | 4142 | Peak |
| 7:45 | 8:00 | 0 | 422 | 110 | 0 | 81 | 93 | 0 | 78 | 215 | 4127 | |
| 8:00 | 8:15 | 0 | 438 | 112 | 0 | 86 | 104 | 0 | 50 | 223 | 4141 | |
| 8:15 | 8:30 | 0 | 410 | 95 | 0 | 129 | 104 | 0 | 93 | 260 | 4046 | |
| 8:30 | 8:45 | 0 | 404 | 115 | 0 | 96 | 110 | 0 | 64 | 235 | 3729 | |
| 8:45 | 9:00 | 0 | 400 | 94 | 0 | 71 | 113 | 0 | 83 | 252 | 3425 | |
| 9:00 | 9:15 | 0 | 339 | 79 | 0 | 88 | 96 | 0 | 86 | 230 | 3154 | |
| 9:15 | 9:30 | 0 | 293 | 70 | 0 | 60 | 78 | 0 | 72 | 201 | | |
| 9:30 | 9:45 | 0 | 250 | 62 | 0 | 69 | 76 | 0 | 62 | 201 | | |
| 9:45 | 10:00 | 0 | 272 | 58 | 0 | 66 | 86 | 0 | 65 | 195 | | |
| 15:00 | 15:15 | 0 | 347 | 64 | 0 | 134 | 63 | 0 | 121 | 331 | 4437 | |
| 15:15 | 15:30 | 0 | 354 | 85 | 0 | 138 | 104 | 0 | 101 | 332 | 4527 | |
| 15:30 | 15:45 | 0 | 364 | 94 | 0 | 117 | 91 | 0 | 118 | 394 | 4616 | |
| 15:45 | 16:00 | 0 | 298 | 73 | 0 | 135 | 88 | 0 | 109 | 382 | 4575 | |
| 16:00 | 16:15 | 0 | 346 | 86 | 0 | 134 | 77 | 0 | 128 | 379 | 4620 | Peak |
| 16:15 | 16:30 | 0 | 399 | 80 | 0 | 122 | 100 | 0 | 108 | 394 | 4609 | |
| 16:30 | 16:45 | 0 | 350 | 87 | 0 | 128 | 88 | 0 | 112 | 372 | 4584 | |
| 16:45 | 17:00 | 0 | 338 | 56 | 0 | 144 | 95 | 0 | 116 | 381 | 4620 | Peak |
| 17:00 | 17:15 | 0 | 357 | 82 | 0 | 132 | 82 | 0 | 108 | 378 | 4562 | |
| 17:15 | 17:30 | 0 | 337 | 72 | 0 | 146 | 97 | 0 | 113 | 413 | 4583 | |
| 17:30 | 17:45 | 0 | 336 | 97 | 0 | 122 | 73 | 0 | 107 | 438 | 4316 | |
| 17:45 | 18:00 | 0 | 260 | 78 | 0 | 169 | 65 | 0 | 100 | 400 | 4010 | |
| 18:00 | 18:15 | 0 | 282 | 69 | 0 | 140 | 95 | 0 | 128 | 446 | 3705 | |
| 18:15 | 18:30 | 0 | 238 | 69 | 0 | 119 | 89 | 0 | 85 | 311 | | |
| 18:30 | 18:45 | 0 | 232 | 63 | 0 | 88 | 68 | 0 | 97 | 319 | | |
| 18:45 | 19:00 | 0 | 212 | 57 | 0 | 80 | 82 | 0 | 75 | 261 | | |

Intersection of GWH and Parker St, Penrith

GPS: -33.75688, 150.71211
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: Penrith
 Customer: GHD

North: Parker St
 East: GWH
 South: Parker St
 West: GWH

Survey Period: AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak: AM: 8:15 AM-9:15 AM
 PM: 4:15 PM-5:15 PM



All Vehicles

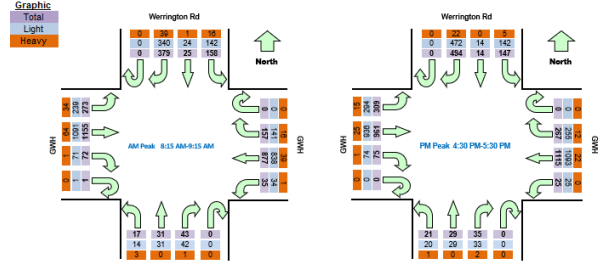
| Time | | North Approach Parker St | | | | East Approach GWH | | | | South Approach Parker St | | | | West Approach GWH | | | | Hourly Total | |
|--------------|------------|--------------------------|----|-----|-----|-------------------|-----|-----|----|--------------------------|----|-----|-----|-------------------|----|-----|-----|--------------|------|
| Period Start | Period End | U | R | SB | L | U | R | VB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 12 | 286 | 111 | 0 | 43 | 34 | 21 | 0 | 20 | 124 | 26 | 0 | 19 | 36 | 13 | 3692 | |
| 6:15 | 6:30 | 0 | 19 | 293 | 126 | 0 | 76 | 44 | 23 | 0 | 31 | 155 | 19 | 0 | 20 | 35 | 18 | 3931 | |
| 6:30 | 6:45 | 0 | 33 | 273 | 155 | 0 | 66 | 54 | 28 | 0 | 33 | 160 | 32 | 0 | 54 | 82 | 23 | 4155 | |
| 6:45 | 7:00 | 0 | 26 | 313 | 179 | 0 | 61 | 64 | 44 | 0 | 30 | 212 | 46 | 0 | 37 | 61 | 22 | 4392 | |
| 7:00 | 7:15 | 0 | 32 | 257 | 136 | 0 | 75 | 62 | 37 | 0 | 27 | 167 | 62 | 0 | 40 | 61 | 28 | 4642 | |
| 7:15 | 7:30 | 0 | 45 | 283 | 151 | 0 | 65 | 65 | 40 | 0 | 30 | 187 | 59 | 0 | 38 | 87 | 33 | 4946 | |
| 7:30 | 7:45 | 0 | 33 | 256 | 214 | 0 | 100 | 117 | 45 | 0 | 30 | 182 | 97 | 0 | 35 | 86 | 35 | 5278 | |
| 7:45 | 8:00 | 0 | 54 | 307 | 209 | 0 | 60 | 126 | 55 | 0 | 37 | 250 | 82 | 0 | 38 | 94 | 33 | 5467 | |
| 8:00 | 8:15 | 0 | 49 | 259 | 178 | 0 | 69 | 152 | 40 | 0 | 28 | 220 | 105 | 0 | 42 | 92 | 54 | 5493 | |
| 8:15 | 8:30 | 0 | 78 | 248 | 176 | 0 | 81 | 184 | 65 | 0 | 62 | 232 | 92 | 0 | 30 | 111 | 56 | 5517 | Peak |
| 8:30 | 8:45 | 0 | 82 | 245 | 206 | 0 | 71 | 172 | 53 | 0 | 93 | 185 | 115 | 0 | 40 | 107 | 50 | 5210 | |
| 8:45 | 9:00 | 0 | 98 | 204 | 183 | 0 | 61 | 174 | 53 | 0 | 65 | 197 | 134 | 0 | 45 | 95 | 62 | 4847 | |
| 9:00 | 9:15 | 0 | 77 | 225 | 157 | 0 | 97 | 148 | 47 | 0 | 29 | 229 | 108 | 0 | 44 | 93 | 58 | 4574 | |
| 9:15 | 9:30 | 0 | 60 | 182 | 131 | 0 | 70 | 156 | 37 | 0 | 30 | 152 | 83 | 0 | 42 | 109 | 56 | | |
| 9:30 | 9:45 | 0 | 75 | 218 | 109 | 0 | 62 | 125 | 36 | 0 | 15 | 175 | 78 | 0 | 37 | 75 | 51 | | |
| 9:45 | 10:00 | 0 | 75 | 175 | 114 | 0 | 88 | 140 | 41 | 0 | 19 | 144 | 90 | 0 | 61 | 91 | 60 | | |
| 15:00 | 15:15 | 0 | 53 | 217 | 170 | 0 | 101 | 166 | 41 | 0 | 27 | 195 | 65 | 0 | 85 | 147 | 106 | 5685 | |
| 15:15 | 15:30 | 0 | 81 | 268 | 169 | 0 | 84 | 163 | 50 | 0 | 19 | 211 | 81 | 0 | 58 | 122 | 103 | 5785 | |
| 15:30 | 15:45 | 0 | 78 | 279 | 126 | 0 | 82 | 175 | 41 | 0 | 10 | 256 | 89 | 0 | 79 | 137 | 113 | 5862 | |
| 15:45 | 16:00 | 0 | 77 | 252 | 132 | 0 | 66 | 159 | 51 | 0 | 28 | 284 | 98 | 0 | 52 | 120 | 119 | 5946 | |
| 16:00 | 16:15 | 0 | 57 | 251 | 144 | 0 | 90 | 166 | 22 | 0 | 30 | 291 | 88 | 0 | 81 | 118 | 135 | 6034 | |
| 16:15 | 16:30 | 0 | 89 | 233 | 154 | 0 | 73 | 225 | 47 | 0 | 20 | 220 | 73 | 0 | 76 | 160 | 116 | 6114 | Peak |
| 16:30 | 16:45 | 0 | 80 | 311 | 186 | 0 | 69 | 187 | 36 | 0 | 5 | 250 | 88 | 0 | 64 | 151 | 122 | 6104 | |
| 16:45 | 17:00 | 0 | 66 | 222 | 166 | 0 | 66 | 191 | 36 | 0 | 14 | 320 | 86 | 0 | 69 | 145 | 145 | 6004 | |
| 17:00 | 17:15 | 0 | 83 | 275 | 161 | 0 | 71 | 187 | 28 | 0 | 22 | 279 | 78 | 0 | 75 | 160 | 134 | 5875 | |
| 17:15 | 17:30 | 0 | 76 | 233 | 158 | 0 | 102 | 199 | 38 | 0 | 8 | 232 | 85 | 1 | 67 | 136 | 141 | 5641 | |
| 17:30 | 17:45 | 0 | 82 | 245 | 132 | 0 | 63 | 158 | 32 | 0 | 15 | 288 | 97 | 0 | 48 | 139 | 150 | 5404 | |
| 17:45 | 18:00 | 0 | 74 | 200 | 147 | 0 | 101 | 134 | 45 | 0 | 22 | 264 | 84 | 0 | 60 | 138 | 128 | 4969 | |
| 18:00 | 18:15 | 0 | 82 | 183 | 103 | 0 | 98 | 152 | 42 | 0 | 23 | 220 | 88 | 0 | 75 | 143 | 110 | 4575 | |
| 18:15 | 18:30 | 0 | 75 | 196 | 103 | 0 | 109 | 127 | 22 | 0 | 22 | 230 | 77 | 0 | 65 | 117 | 96 | | |
| 18:30 | 18:45 | 0 | 56 | 126 | 63 | 0 | 73 | 139 | 33 | 0 | 10 | 180 | 69 | 0 | 55 | 107 | 103 | | |
| 18:45 | 19:00 | 0 | 75 | 144 | 89 | 0 | 118 | 89 | 35 | 0 | 21 | 146 | 64 | 0 | 43 | 84 | 95 | | |

Intersection of GWH and Werrington Rd, Claremont Meadows

GPS -33.76824, 150.75788
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: Claremont Meadows
 Customer: GHD

North: Werrington Rd
 East: GWH
 South: Reserve Rd
 West: GWH

Survey Period AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak AM: 8:15 AM-9:15 AM
 PM: 4:30 PM-5:30 PM



All Vehicles

| Time | | North Approach Werrington Rd | | | | East Approach GWH | | | | South Approach Reserve Rd | | | | West Approach GWH | | | | Hourly Total | |
|--------------|------------|------------------------------|-----|----|----|-------------------|----|-----|----|---------------------------|----|----|---|-------------------|----|-----|----|--------------|------|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 117 | 2 | 32 | 0 | 24 | 77 | 10 | 0 | 2 | 2 | 4 | 0 | 9 | 115 | 28 | 1920 | |
| 6:15 | 6:30 | 0 | 78 | 9 | 26 | 0 | 24 | 97 | 4 | 0 | 6 | 5 | 1 | 0 | 20 | 116 | 47 | 1978 | |
| 6:30 | 6:45 | 0 | 80 | 7 | 34 | 0 | 30 | 128 | 15 | 0 | 9 | 9 | 7 | 0 | 25 | 132 | 44 | 2113 | |
| 6:45 | 7:00 | 0 | 104 | 1 | 31 | 0 | 29 | 128 | 7 | 0 | 7 | 2 | 5 | 0 | 22 | 136 | 73 | 2240 | |
| 7:00 | 7:15 | 0 | 86 | 5 | 48 | 0 | 30 | 88 | 7 | 0 | 8 | 3 | 3 | 0 | 18 | 122 | 62 | 2371 | |
| 7:15 | 7:30 | 0 | 94 | 2 | 61 | 0 | 32 | 142 | 8 | 0 | 9 | 7 | 3 | 0 | 22 | 136 | 52 | 2598 | |
| 7:30 | 7:45 | 0 | 97 | 5 | 41 | 0 | 30 | 164 | 2 | 0 | 11 | 4 | 5 | 0 | 13 | 220 | 55 | 2789 | |
| 7:45 | 8:00 | 0 | 79 | 4 | 66 | 0 | 33 | 210 | 4 | 0 | 9 | 9 | 5 | 0 | 15 | 167 | 75 | 2964 | |
| 8:00 | 8:15 | 0 | 93 | 6 | 34 | 0 | 37 | 196 | 10 | 0 | 7 | 5 | 7 | 0 | 19 | 223 | 70 | 3197 | |
| 8:15 | 8:30 | 0 | 104 | 4 | 39 | 0 | 34 | 220 | 12 | 0 | 7 | 9 | 2 | 1 | 13 | 236 | 78 | 3223 | Peak |
| 8:30 | 8:45 | 0 | 104 | 8 | 42 | 0 | 39 | 251 | 7 | 0 | 8 | 1 | 3 | 0 | 20 | 268 | 71 | 3073 | |
| 8:45 | 9:00 | 0 | 85 | 8 | 37 | 0 | 52 | 219 | 8 | 0 | 13 | 14 | 6 | 0 | 18 | 378 | 71 | 2892 | |
| 9:00 | 9:15 | 0 | 86 | 5 | 40 | 0 | 32 | 187 | 8 | 0 | 15 | 7 | 6 | 0 | 21 | 273 | 53 | 2516 | |
| 9:15 | 9:30 | 0 | 89 | 3 | 48 | 0 | 37 | 195 | 8 | 0 | 8 | 4 | 2 | 0 | 8 | 149 | 58 | | |
| 9:30 | 9:45 | 0 | 60 | 5 | 30 | 0 | 35 | 251 | 13 | 0 | 9 | 3 | 6 | 0 | 17 | 166 | 46 | | |
| 9:45 | 10:00 | 0 | 72 | 3 | 24 | 0 | 32 | 164 | 3 | 0 | 7 | 9 | 7 | 0 | 15 | 142 | 55 | | |
| 15:00 | 15:15 | 0 | 103 | 1 | 35 | 0 | 43 | 224 | 9 | 0 | 10 | 4 | 7 | 0 | 12 | 205 | 66 | 3095 | |
| 15:15 | 15:30 | 0 | 130 | 1 | 40 | 0 | 58 | 268 | 7 | 0 | 8 | 9 | 5 | 0 | 30 | 228 | 69 | 3182 | |
| 15:30 | 15:45 | 0 | 128 | 0 | 30 | 0 | 53 | 254 | 7 | 0 | 12 | 4 | 5 | 0 | 16 | 203 | 79 | 3153 | |
| 15:45 | 16:00 | 0 | 98 | 1 | 28 | 0 | 38 | 229 | 8 | 0 | 11 | 8 | 8 | 0 | 21 | 197 | 85 | 3276 | |
| 16:00 | 16:15 | 0 | 119 | 3 | 28 | 0 | 48 | 264 | 12 | 0 | 7 | 9 | 7 | 0 | 16 | 209 | 84 | 3358 | |
| 16:15 | 16:30 | 0 | 119 | 5 | 44 | 0 | 44 | 302 | 7 | 0 | 11 | 9 | 6 | 0 | 11 | 210 | 56 | 3427 | |
| 16:30 | 16:45 | 0 | 119 | 1 | 31 | 0 | 72 | 322 | 9 | 0 | 8 | 9 | 5 | 0 | 21 | 251 | 66 | 3492 | Peak |
| 16:45 | 17:00 | 0 | 143 | 5 | 37 | 0 | 56 | 228 | 3 | 0 | 6 | 4 | 8 | 0 | 11 | 235 | 78 | 3450 | |
| 17:00 | 17:15 | 0 | 104 | 5 | 39 | 0 | 73 | 287 | 7 | 0 | 8 | 8 | 5 | 0 | 20 | 225 | 94 | 3437 | |
| 17:15 | 17:30 | 0 | 128 | 3 | 40 | 0 | 66 | 278 | 6 | 0 | 13 | 8 | 3 | 0 | 23 | 250 | 71 | 3238 | |
| 17:30 | 17:45 | 0 | 107 | 4 | 45 | 0 | 65 | 345 | 6 | 0 | 2 | 7 | 2 | 0 | 18 | 195 | 76 | 2977 | |
| 17:45 | 18:00 | 0 | 103 | 2 | 43 | 0 | 64 | 249 | 5 | 0 | 8 | 9 | 4 | 0 | 10 | 222 | 82 | 2638 | |
| 18:00 | 18:15 | 0 | 85 | 3 | 33 | 0 | 61 | 228 | 2 | 0 | 3 | 4 | 1 | 0 | 19 | 154 | 83 | 2333 | |
| 18:15 | 18:30 | 0 | 79 | 5 | 24 | 0 | 42 | 177 | 7 | 0 | 7 | 10 | 2 | 0 | 17 | 169 | 89 | | |
| 18:30 | 18:45 | 0 | 81 | 10 | 26 | 0 | 46 | 173 | 4 | 0 | 8 | 15 | 4 | 0 | 17 | 97 | 52 | | |
| 18:45 | 19:00 | 0 | 51 | 2 | 28 | 0 | 36 | 151 | 10 | 0 | 7 | 4 | 3 | 0 | 17 | 120 | 67 | | |

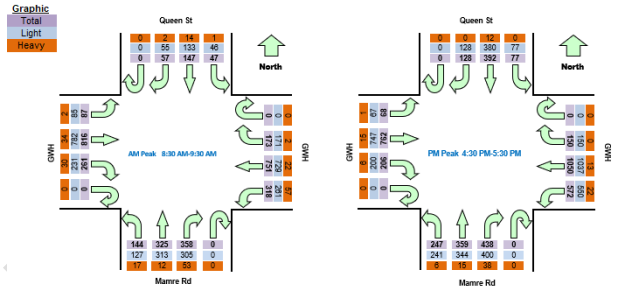
Intersection of GWH and Queen St, St Marys

GPS -33.77001, 150.77348

| | |
|-----------|--------------|
| Date: | Thu 29/06/23 |
| Weather: | Overcast |
| Suburban: | St Marys |
| Customer: | GHD |

| | |
|--------|----------|
| North: | Queen St |
| East: | GWH |
| South: | Mamre Rd |
| West: | GWH |

| | |
|---------------|----------------------|
| Survey Period | AM: 6:00 AM-10:00 AM |
| | PM: 3:00 PM-7:00 PM |
| Traffic Peak | AM: 8:30 AM-9:30 AM |
| | PM: 4:30 PM-5:30 PM |



All Vehicles

| Time | | North Approach Queen St | | | | East Approach GWH | | | | South Approach Mamre Rd | | | | West Approach GWH | | | | Hourly Total | |
|--------------|------------|-------------------------|----|-----|----|-------------------|----|-----|-----|-------------------------|-----|-----|----|-------------------|----|-----|----|--------------|------|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 7 | 26 | 2 | 0 | 6 | 66 | 116 | 0 | 101 | 54 | 17 | 0 | 40 | 104 | 4 | 2512 | |
| 6:15 | 6:30 | 0 | 3 | 28 | 6 | 0 | 11 | 81 | 123 | 0 | 112 | 82 | 29 | 0 | 42 | 95 | 8 | 2625 | |
| 6:30 | 6:45 | 0 | 8 | 38 | 5 | 0 | 8 | 87 | 96 | 0 | 117 | 80 | 51 | 0 | 50 | 137 | 3 | 2740 | |
| 6:45 | 7:00 | 0 | 9 | 34 | 2 | 0 | 15 | 113 | 107 | 0 | 111 | 83 | 28 | 0 | 29 | 132 | 6 | 2878 | |
| 7:00 | 7:15 | 0 | 6 | 23 | 4 | 0 | 14 | 72 | 107 | 0 | 117 | 87 | 30 | 0 | 46 | 140 | 10 | 3086 | |
| 7:15 | 7:30 | 0 | 6 | 46 | 12 | 0 | 23 | 132 | 93 | 0 | 107 | 76 | 27 | 0 | 44 | 161 | 8 | 3239 | |
| 7:30 | 7:45 | 0 | 7 | 42 | 10 | 0 | 25 | 148 | 103 | 0 | 126 | 79 | 47 | 0 | 43 | 183 | 5 | 3331 | |
| 7:45 | 8:00 | 0 | 8 | 27 | 8 | 0 | 20 | 156 | 100 | 0 | 133 | 96 | 35 | 0 | 56 | 234 | 4 | 3378 | |
| 8:00 | 8:15 | 0 | 16 | 40 | 12 | 0 | 25 | 169 | 86 | 0 | 99 | 64 | 54 | 0 | 44 | 193 | 7 | 3431 | |
| 8:15 | 8:30 | 0 | 8 | 45 | 19 | 0 | 37 | 155 | 119 | 0 | 73 | 60 | 44 | 0 | 35 | 219 | 13 | 3482 | |
| 8:30 | 8:45 | 0 | 14 | 37 | 10 | 0 | 40 | 207 | 89 | 0 | 80 | 63 | 43 | 0 | 64 | 200 | 18 | 3484 | Peak |
| 8:45 | 9:00 | 0 | 11 | 29 | 9 | 0 | 41 | 184 | 80 | 0 | 100 | 86 | 39 | 0 | 75 | 249 | 27 | 3382 | |
| 9:00 | 9:15 | 0 | 14 | 40 | 19 | 0 | 51 | 144 | 72 | 0 | 83 | 81 | 29 | 0 | 76 | 230 | 21 | 3228 | |
| 9:15 | 9:30 | 0 | 18 | 41 | 9 | 0 | 41 | 216 | 77 | 0 | 95 | 95 | 33 | 0 | 46 | 137 | 21 | | |
| 9:30 | 9:45 | 0 | 20 | 42 | 16 | 0 | 38 | 165 | 85 | 0 | 89 | 89 | 32 | 0 | 47 | 133 | 7 | | |
| 9:45 | 10:00 | 0 | 17 | 41 | 7 | 0 | 34 | 173 | 82 | 0 | 96 | 76 | 36 | 0 | 28 | 167 | 19 | | |
| 15:00 | 15:15 | 0 | 13 | 75 | 16 | 0 | 39 | 249 | 128 | 0 | 118 | 75 | 43 | 0 | 45 | 185 | 13 | 4052 | |
| 15:15 | 15:30 | 0 | 22 | 69 | 25 | 0 | 43 | 222 | 138 | 0 | 125 | 102 | 60 | 0 | 44 | 160 | 8 | 4048 | |
| 15:30 | 15:45 | 0 | 24 | 87 | 21 | 0 | 41 | 212 | 143 | 0 | 99 | 82 | 60 | 0 | 50 | 157 | 11 | 4151 | |
| 15:45 | 16:00 | 0 | 21 | 73 | 13 | 0 | 44 | 231 | 150 | 0 | 129 | 94 | 49 | 0 | 46 | 184 | 14 | 4213 | |
| 16:00 | 16:15 | 0 | 28 | 91 | 22 | 0 | 39 | 212 | 163 | 0 | 95 | 77 | 63 | 0 | 42 | 146 | 17 | 4279 | |
| 16:15 | 16:30 | 0 | 19 | 74 | 13 | 0 | 35 | 314 | 165 | 0 | 111 | 98 | 68 | 0 | 49 | 159 | 16 | 4398 | |
| 16:30 | 16:45 | 0 | 38 | 94 | 18 | 0 | 46 | 245 | 138 | 0 | 95 | 90 | 62 | 0 | 40 | 170 | 13 | 4449 | Peak |
| 16:45 | 17:00 | 0 | 26 | 91 | 26 | 0 | 37 | 251 | 150 | 0 | 105 | 89 | 52 | 0 | 61 | 209 | 17 | 4435 | |
| 17:00 | 17:15 | 0 | 33 | 104 | 15 | 0 | 31 | 248 | 143 | 0 | 133 | 103 | 66 | 0 | 55 | 165 | 18 | 4332 | |
| 17:15 | 17:30 | 0 | 31 | 103 | 18 | 0 | 36 | 306 | 141 | 0 | 105 | 77 | 67 | 0 | 50 | 218 | 20 | 4182 | |
| 17:30 | 17:45 | 0 | 27 | 68 | 12 | 0 | 16 | 253 | 153 | 0 | 131 | 87 | 78 | 0 | 40 | 158 | 12 | 3833 | |
| 17:45 | 18:00 | 0 | 19 | 81 | 13 | 0 | 39 | 236 | 131 | 0 | 117 | 85 | 64 | 0 | 42 | 170 | 14 | 3485 | |
| 18:00 | 18:15 | 0 | 21 | 84 | 9 | 0 | 33 | 230 | 100 | 0 | 104 | 64 | 67 | 0 | 53 | 179 | 20 | 3112 | |
| 18:15 | 18:30 | 0 | 19 | 61 | 13 | 0 | 19 | 184 | 92 | 0 | 106 | 67 | 76 | 0 | 38 | 135 | 13 | | |
| 18:30 | 18:45 | 0 | 23 | 58 | 9 | 0 | 25 | 177 | 69 | 0 | 90 | 55 | 52 | 0 | 22 | 101 | 6 | | |
| 18:45 | 19:00 | 0 | 13 | 58 | 6 | 0 | 20 | 148 | 74 | 0 | 84 | 52 | 47 | 0 | 32 | 97 | 7 | | |

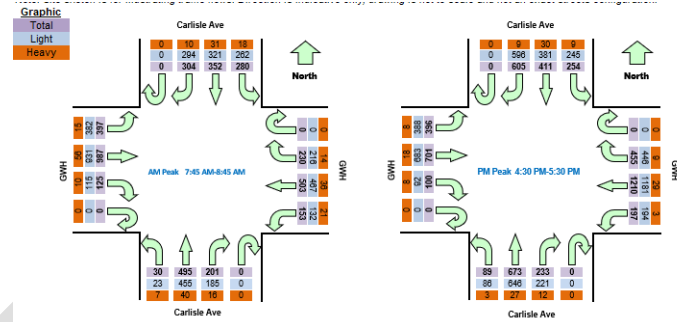
Intersection of GWH and Carlisle Ave, Mount Druitt

GPS -33.77928, 150.81442

| | |
|-----------|--------------|
| Date: | Thu 29/06/23 |
| Weather: | Overcast |
| Suburban: | Mount Druitt |
| Customer: | GHD |

| | |
|--------|--------------|
| North: | Carlisle Ave |
| East: | GWH |
| South: | Carlisle Ave |
| West: | GWH |

| | |
|---------------|----------------------|
| Survey Period | AM: 6:00 AM-10:00 AM |
| | PM: 3:00 PM-7:00 PM |
| Traffic Peak | AM: 7:45 AM-8:45 AM |
| | PM: 4:30 PM-5:30 PM |



All Vehicles

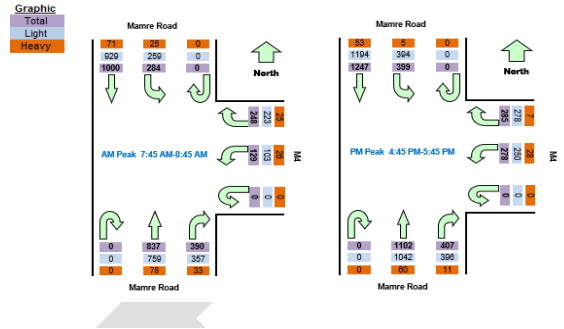
| Period Start | Period End | North Approach Carlisle Ave | | | | East Approach GWH | | | | South Approach Carlisle Ave | | | West Approach GWH | | | Hourly Total | Peak | | |
|--------------|------------|-----------------------------|-----|-----|----|-------------------|-----|-----|----|-----------------------------|----|-----|-------------------|---|----|--------------|------|------|------|
| | | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | | | EB | L |
| 6:00 | 6:15 | 0 | 26 | 106 | 76 | 0 | 24 | 57 | 20 | 0 | 17 | 70 | 5 | 0 | 22 | 195 | 42 | 3065 | |
| 6:15 | 6:30 | 0 | 39 | 110 | 77 | 0 | 29 | 73 | 18 | 0 | 68 | 67 | 5 | 0 | 25 | 209 | 49 | 3274 | |
| 6:30 | 6:45 | 0 | 35 | 71 | 82 | 0 | 33 | 104 | 22 | 0 | 43 | 82 | 3 | 0 | 19 | 233 | 69 | 3376 | |
| 6:45 | 7:00 | 0 | 38 | 113 | 82 | 0 | 52 | 63 | 26 | 0 | 51 | 101 | 5 | 0 | 37 | 202 | 70 | 3544 | |
| 7:00 | 7:15 | 0 | 45 | 78 | 69 | 0 | 41 | 98 | 18 | 0 | 52 | 106 | 6 | 0 | 21 | 275 | 60 | 3708 | |
| 7:15 | 7:30 | 0 | 46 | 101 | 63 | 0 | 39 | 79 | 24 | 0 | 60 | 109 | 4 | 0 | 18 | 241 | 87 | 3952 | |
| 7:30 | 7:45 | 0 | 63 | 114 | 93 | 0 | 47 | 25 | 26 | 0 | 62 | 112 | 5 | 0 | 17 | 295 | 105 | 4026 | |
| 7:45 | 8:00 | 0 | 62 | 66 | 72 | 0 | 46 | 110 | 29 | 0 | 77 | 158 | 5 | 0 | 16 | 262 | 101 | 4057 | Peak |
| 8:00 | 8:15 | 0 | 69 | 87 | 92 | 0 | 60 | 150 | 41 | 0 | 54 | 102 | 8 | 0 | 42 | 302 | 106 | 4018 | |
| 8:15 | 8:30 | 0 | 93 | 94 | 59 | 0 | 47 | 114 | 42 | 0 | 40 | 95 | 8 | 0 | 19 | 242 | 92 | 3856 | |
| 8:30 | 8:45 | 0 | 80 | 105 | 57 | 0 | 77 | 129 | 41 | 0 | 30 | 140 | 9 | 0 | 48 | 181 | 98 | 3817 | |
| 8:45 | 9:00 | 0 | 88 | 84 | 38 | 0 | 87 | 33 | 38 | 0 | 26 | 108 | 7 | 0 | 39 | 272 | 145 | 3708 | |
| 9:00 | 9:15 | 0 | 92 | 86 | 62 | 0 | 56 | 106 | 19 | 0 | 27 | 109 | 17 | 0 | 44 | 210 | 123 | 3576 | |
| 9:15 | 9:30 | 0 | 92 | 102 | 52 | 0 | 51 | 152 | 26 | 0 | 33 | 82 | 16 | 0 | 26 | 171 | 103 | | |
| 9:30 | 9:45 | 0 | 110 | 107 | 46 | 0 | 63 | 146 | 23 | 0 | 23 | 101 | 16 | 0 | 25 | 132 | 94 | | |
| 9:45 | 10:00 | 0 | 99 | 109 | 44 | 0 | 69 | 134 | 22 | 0 | 14 | 76 | 19 | 0 | 27 | 122 | 98 | | |
| 15:00 | 15:15 | 0 | 142 | 93 | 66 | 0 | 101 | 230 | 40 | 0 | 48 | 157 | 26 | 0 | 37 | 188 | 101 | 4919 | |
| 15:15 | 15:30 | 0 | 141 | 108 | 61 | 0 | 112 | 274 | 52 | 0 | 33 | 147 | 17 | 0 | 39 | 208 | 97 | 4953 | |
| 15:30 | 15:45 | 0 | 142 | 103 | 74 | 0 | 81 | 235 | 31 | 0 | 48 | 183 | 21 | 0 | 35 | 177 | 86 | 4948 | |
| 15:45 | 16:00 | 0 | 111 | 104 | 63 | 0 | 118 | 274 | 37 | 0 | 30 | 149 | 28 | 0 | 29 | 151 | 91 | 4996 | |
| 16:00 | 16:15 | 0 | 119 | 91 | 47 | 0 | 115 | 307 | 44 | 0 | 56 | 151 | 22 | 0 | 19 | 191 | 101 | 5205 | |
| 16:15 | 16:30 | 0 | 151 | 101 | 78 | 0 | 110 | 273 | 41 | 0 | 51 | 191 | 20 | 0 | 33 | 135 | 100 | 5298 | |
| 16:30 | 16:45 | 0 | 150 | 89 | 67 | 0 | 91 | 288 | 62 | 0 | 55 | 157 | 14 | 0 | 18 | 177 | 96 | 5324 | Peak |
| 16:45 | 17:00 | 0 | 142 | 131 | 71 | 0 | 122 | 331 | 42 | 0 | 57 | 187 | 26 | 0 | 18 | 164 | 103 | 5323 | |
| 17:00 | 17:15 | 0 | 134 | 86 | 49 | 0 | 145 | 323 | 51 | 0 | 61 | 143 | 29 | 0 | 37 | 206 | 92 | 5168 | |
| 17:15 | 17:30 | 0 | 179 | 105 | 67 | 0 | 97 | 288 | 42 | 0 | 60 | 186 | 20 | 0 | 27 | 154 | 105 | 4908 | |
| 17:30 | 17:45 | 0 | 152 | 100 | 58 | 0 | 130 | 277 | 30 | 0 | 58 | 150 | 20 | 0 | 26 | 166 | 96 | 4610 | |
| 17:45 | 18:00 | 0 | 156 | 101 | 65 | 0 | 115 | 253 | 49 | 0 | 44 | 157 | 20 | 0 | 14 | 158 | 107 | 4261 | |
| 18:00 | 18:15 | 0 | 148 | 79 | 42 | 0 | 85 | 203 | 25 | 0 | 42 | 173 | 26 | 0 | 25 | 149 | 99 | 3824 | |
| 18:15 | 18:30 | 0 | 121 | 77 | 46 | 0 | 82 | 195 | 30 | 0 | 28 | 141 | 11 | 0 | 19 | 164 | 98 | | |
| 18:30 | 18:45 | 0 | 126 | 93 | 58 | 0 | 73 | 133 | 23 | 0 | 23 | 154 | 15 | 0 | 15 | 111 | 90 | | |
| 18:45 | 19:00 | 0 | 114 | 78 | 44 | 0 | 47 | 147 | 11 | 0 | 30 | 123 | 14 | 0 | 18 | 94 | 82 | | |

Intersection of M4 and Mamre Road, St Clair

GPS: -33.78527, 150.77078
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: St Clair
 Customer: GHD

North: Mamre Road
 East: M4
 South: Mamre Road
 West: N/A

Survey Period: AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak: AM: 7:45 AM-8:45 AM
 PM: 4:45 PM-5:45 PM



All Vehicles

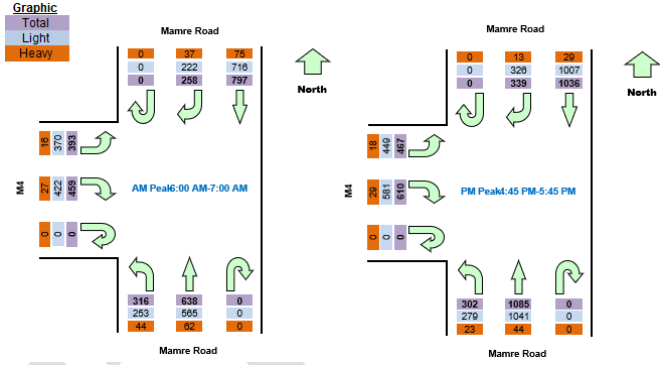
| Time | | North Approach Mamre Rd | | | East Approach M4 | | | South Approach Mamre Rd | | | Hourly Total | |
|--------------|------------|-------------------------|-----|-----|------------------|----|----|-------------------------|-----|-----|--------------|------|
| Period Start | Period End | U | SB | L | U | R | L | U | R | NB | Hour | Peak |
| 6:00 | 6:15 | 0 | 253 | 54 | 0 | 52 | 73 | 0 | 46 | 164 | 2660 | |
| 6:15 | 6:30 | 0 | 259 | 71 | 0 | 61 | 66 | 0 | 39 | 190 | 2631 | |
| 6:30 | 6:45 | 0 | 269 | 56 | 0 | 68 | 37 | 0 | 81 | 187 | 2604 | |
| 6:45 | 7:00 | 0 | 221 | 73 | 0 | 68 | 42 | 0 | 66 | 164 | 2576 | |
| 7:00 | 7:15 | 0 | 229 | 45 | 0 | 66 | 24 | 0 | 65 | 184 | 2769 | |
| 7:15 | 7:30 | 0 | 245 | 66 | 0 | 46 | 31 | 0 | 75 | 196 | 2815 | |
| 7:30 | 7:45 | 0 | 245 | 76 | 0 | 45 | 24 | 0 | 62 | 218 | 2823 | |
| 7:45 | 8:00 | 0 | 354 | 57 | 0 | 71 | 40 | 0 | 83 | 222 | 2888 | Peak |
| 8:00 | 8:15 | 0 | 220 | 75 | 0 | 50 | 36 | 0 | 88 | 190 | 2768 | |
| 8:15 | 8:30 | 0 | 189 | 80 | 0 | 69 | 29 | 0 | 110 | 190 | 2776 | |
| 8:30 | 8:45 | 0 | 237 | 72 | 0 | 58 | 24 | 0 | 109 | 235 | 2621 | |
| 8:45 | 9:00 | 0 | 234 | 75 | 0 | 62 | 41 | 0 | 99 | 196 | 2461 | |
| 9:00 | 9:15 | 0 | 256 | 60 | 0 | 41 | 31 | 0 | 83 | 196 | 2235 | |
| 9:15 | 9:30 | 0 | 151 | 48 | 0 | 44 | 28 | 0 | 86 | 155 | | |
| 9:30 | 9:45 | 0 | 173 | 62 | 0 | 61 | 36 | 0 | 75 | 168 | | |
| 9:45 | 10:00 | 0 | 147 | 58 | 0 | 62 | 33 | 0 | 56 | 125 | | |
| 15:00 | 15:15 | 0 | 229 | 90 | 0 | 90 | 64 | 0 | 123 | 196 | 3411 | |
| 15:15 | 15:30 | 0 | 266 | 112 | 0 | 78 | 51 | 0 | 133 | 223 | 3471 | |
| 15:30 | 15:45 | 0 | 216 | 141 | 0 | 77 | 57 | 0 | 117 | 239 | 3509 | |
| 15:45 | 16:00 | 0 | 289 | 133 | 0 | 84 | 69 | 0 | 89 | 245 | 3458 | |
| 16:00 | 16:15 | 0 | 282 | 126 | 0 | 72 | 72 | 0 | 102 | 198 | 3486 | |
| 16:15 | 16:30 | 0 | 287 | 110 | 0 | 78 | 67 | 0 | 110 | 249 | 3523 | |
| 16:30 | 16:45 | 0 | 276 | 130 | 0 | 89 | 57 | 0 | 14 | 230 | 3605 | |
| 16:45 | 17:00 | 0 | 336 | 91 | 0 | 88 | 73 | 0 | 94 | 255 | 3718 | Peak |
| 17:00 | 17:15 | 0 | 283 | 97 | 0 | 71 | 77 | 0 | 118 | 243 | 3561 | |
| 17:15 | 17:30 | 0 | 321 | 111 | 0 | 64 | 62 | 0 | 94 | 331 | 3407 | |
| 17:30 | 17:45 | 0 | 307 | 100 | 0 | 62 | 66 | 0 | 101 | 273 | 3144 | |
| 17:45 | 18:00 | 0 | 293 | 71 | 0 | 71 | 55 | 0 | 78 | 212 | 2832 | |
| 18:00 | 18:15 | 0 | 276 | 77 | 0 | 61 | 55 | 0 | 85 | 181 | 2549 | |
| 18:15 | 18:30 | 0 | 244 | 77 | 0 | 79 | 48 | 0 | 105 | 167 | | |
| 18:30 | 18:45 | 0 | 183 | 64 | 0 | 63 | 58 | 0 | 85 | 144 | | |
| 18:45 | 19:00 | 0 | 177 | 64 | 0 | 53 | 36 | 0 | 60 | 107 | | |

Intersection of M4 and Mamre Road, St Clair

GPS -33.78325, 150.77111
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: St Clair
 Customer: GHD

North: Mamre Road
 East: N/A
 South: Mamre Road
 West: M4

Survey Period AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak AM: 6:00 AM-7:00 AM
 PM: 4:45 PM-5:45 PM



All Vehicles

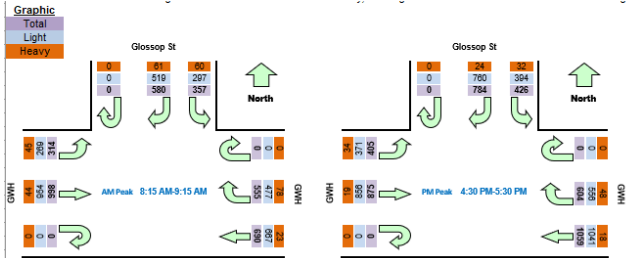
| Time | | North Approach Mamre Road | | | South Approach Mamre Road | | | West Approach M4 | | | Hourly Total | |
|--------------|------------|---------------------------|-----|-----|---------------------------|-----|----|------------------|-----|-----|--------------|------|
| Period Start | Period End | U | R | SB | U | NB | L | U | R | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 68 | 198 | 0 | 122 | 94 | 0 | 109 | 75 | 2861 | |
| 6:15 | 6:30 | 0 | 73 | 216 | 0 | 167 | 84 | 0 | 114 | 103 | 2918 | |
| 6:30 | 6:45 | 0 | 68 | 210 | 0 | 184 | 71 | 0 | 115 | 113 | 2922 | |
| 6:45 | 7:00 | 0 | 49 | 173 | 0 | 165 | 67 | 0 | 121 | 102 | 2973 | |
| 7:00 | 7:15 | 0 | 77 | 168 | 0 | 173 | 77 | 0 | 106 | 122 | 3267 | Peak |
| 7:15 | 7:30 | 0 | 77 | 196 | 0 | 158 | 84 | 0 | 115 | 131 | 3226 | |
| 7:30 | 7:45 | 0 | 66 | 193 | 0 | 193 | 70 | 0 | 128 | 162 | 3104 | |
| 7:45 | 8:00 | 0 | 50 | 201 | 0 | 228 | 65 | 0 | 210 | 217 | 3068 | |
| 8:00 | 8:15 | 0 | 66 | 220 | 0 | 187 | 53 | 0 | 75 | 81 | 2873 | |
| 8:15 | 8:30 | 0 | 62 | 200 | 0 | 194 | 65 | 0 | 69 | 49 | 2947 | |
| 8:30 | 8:45 | 0 | 58 | 209 | 0 | 227 | 66 | 0 | 100 | 116 | 2869 | |
| 8:45 | 9:00 | 0 | 67 | 144 | 0 | 188 | 70 | 0 | 165 | 142 | 2686 | |
| 9:00 | 9:15 | 0 | 66 | 186 | 0 | 178 | 59 | 0 | 130 | 137 | 2458 | |
| 9:15 | 9:30 | 0 | 75 | 133 | 0 | 144 | 55 | 0 | 66 | 88 | | |
| 9:30 | 9:45 | 0 | 57 | 156 | 0 | 182 | 47 | 0 | 79 | 72 | | |
| 9:45 | 10:00 | 0 | 68 | 139 | 0 | 155 | 32 | 0 | 66 | 88 | | |
| 15:00 | 15:15 | 0 | 81 | 211 | 0 | 245 | 41 | 0 | 108 | 111 | 3572 | |
| 15:15 | 15:30 | 0 | 91 | 239 | 0 | 242 | 59 | 0 | 139 | 146 | 3644 | |
| 15:30 | 15:45 | 0 | 127 | 252 | 0 | 277 | 39 | 0 | 105 | 110 | 3660 | |
| 15:45 | 16:00 | 0 | 74 | 268 | 0 | 268 | 61 | 0 | 154 | 124 | 3681 | |
| 16:00 | 16:15 | 0 | 72 | 277 | 0 | 226 | 44 | 0 | 131 | 119 | 3658 | |
| 16:15 | 16:30 | 0 | 79 | 273 | 0 | 270 | 57 | 0 | 124 | 129 | 3719 | |
| 16:30 | 16:45 | 0 | 95 | 256 | 0 | 271 | 48 | 0 | 150 | 111 | 3820 | |
| 16:45 | 17:00 | 0 | 63 | 255 | 0 | 283 | 60 | 0 | 172 | 93 | 3839 | Peak |
| 17:00 | 17:15 | 0 | 106 | 240 | 0 | 233 | 81 | 0 | 140 | 130 | 3753 | |
| 17:15 | 17:30 | 0 | 94 | 295 | 0 | 309 | 86 | 0 | 137 | 112 | 3584 | |
| 17:30 | 17:45 | 0 | 76 | 246 | 0 | 260 | 75 | 0 | 161 | 132 | 3274 | |
| 17:45 | 18:00 | 0 | 61 | 235 | 0 | 245 | 38 | 0 | 129 | 132 | 2917 | |
| 18:00 | 18:15 | 0 | 54 | 221 | 0 | 197 | 45 | 0 | 132 | 112 | 2603 | |
| 18:15 | 18:30 | 0 | 55 | 206 | 0 | 204 | 42 | 0 | 115 | 101 | | |
| 18:30 | 18:45 | 0 | 53 | 175 | 0 | 171 | 36 | 0 | 72 | 86 | | |
| 18:45 | 19:00 | 0 | 47 | 140 | 0 | 128 | 32 | 0 | 101 | 78 | | |

Intersection of GWH and Glossop St, St Clair

GPS -33.77147, 150.77937
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: St Clair
 Customer: GHD

North: Glossop St
 East: GWH
 South: N/A
 West: GWH

Survey Period AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak AM: 8:15 AM-9:15 AM
 PM: 4:30 PM-5:30 PM



All Vehicles

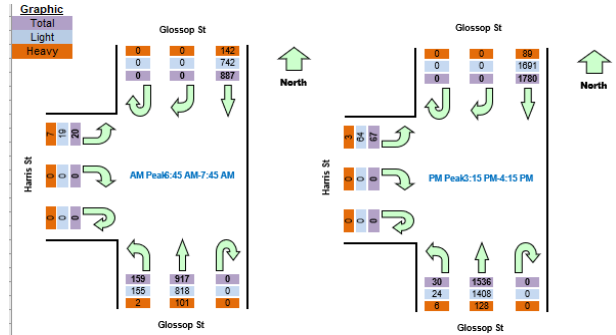
| Time | | North Approach Glossop St | | | East Approach GWH | | | West Approach GWH | | | Hourly Total | |
|--------------|------------|---------------------------|-----|-----|-------------------|-----|-----|-------------------|-----|-----|--------------|------|
| Period Start | Period End | U | R | L | U | R | WB | U | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 118 | 72 | 0 | 63 | 80 | 0 | 105 | 77 | 2450 | |
| 6:15 | 6:30 | 0 | 130 | 61 | 0 | 99 | 93 | 0 | 125 | 81 | 2515 | |
| 6:30 | 6:45 | 0 | 98 | 63 | 0 | 122 | 104 | 0 | 186 | 83 | 2623 | |
| 6:45 | 7:00 | 0 | 123 | 76 | 0 | 145 | 99 | 0 | 160 | 87 | 2734 | |
| 7:00 | 7:15 | 0 | 109 | 66 | 0 | 77 | 80 | 0 | 159 | 89 | 2911 | |
| 7:15 | 7:30 | 0 | 110 | 67 | 0 | 123 | 120 | 0 | 176 | 101 | 3127 | |
| 7:30 | 7:45 | 0 | 123 | 96 | 0 | 110 | 135 | 0 | 221 | 82 | 3315 | |
| 7:45 | 8:00 | 0 | 126 | 83 | 0 | 127 | 139 | 0 | 271 | 121 | 3475 | |
| 8:00 | 8:15 | 0 | 131 | 98 | 0 | 123 | 151 | 0 | 209 | 84 | 3493 | |
| 8:15 | 8:30 | 0 | 151 | 94 | 0 | 155 | 179 | 0 | 230 | 76 | 3494 | Peak |
| 8:30 | 8:45 | 0 | 169 | 110 | 0 | 152 | 200 | 0 | 228 | 68 | 3363 | |
| 8:45 | 9:00 | 0 | 123 | 78 | 0 | 131 | 167 | 0 | 295 | 91 | 3159 | |
| 9:00 | 9:15 | 0 | 137 | 75 | 0 | 117 | 144 | 0 | 245 | 79 | 2943 | |
| 9:15 | 9:30 | 0 | 109 | 75 | 0 | 120 | 194 | 0 | 175 | 81 | | |
| 9:30 | 9:45 | 0 | 132 | 77 | 0 | 108 | 181 | 0 | 161 | 64 | | |
| 9:45 | 10:00 | 0 | 92 | 60 | 0 | 97 | 164 | 0 | 189 | 67 | | |
| 15:00 | 15:15 | 0 | 172 | 112 | 0 | 150 | 235 | 0 | 219 | 106 | 4061 | |
| 15:15 | 15:30 | 0 | 194 | 121 | 0 | 191 | 249 | 0 | 191 | 104 | 4016 | |
| 15:30 | 15:45 | 0 | 187 | 108 | 0 | 176 | 247 | 0 | 193 | 101 | 4063 | |
| 15:45 | 16:00 | 0 | 203 | 121 | 0 | 170 | 207 | 0 | 188 | 116 | 4031 | |
| 16:00 | 16:15 | 0 | 223 | 124 | 0 | 135 | 232 | 0 | 145 | 90 | 4076 | |
| 16:15 | 16:30 | 0 | 210 | 111 | 0 | 151 | 316 | 0 | 212 | 97 | 4148 | |
| 16:30 | 16:45 | 0 | 222 | 116 | 0 | 129 | 249 | 0 | 184 | 80 | 4153 | Peak |
| 16:45 | 17:00 | 0 | 186 | 111 | 0 | 154 | 246 | 0 | 245 | 108 | 4134 | |
| 17:00 | 17:15 | 0 | 194 | 107 | 0 | 164 | 253 | 0 | 193 | 110 | 3998 | |
| 17:15 | 17:30 | 0 | 182 | 92 | 0 | 157 | 311 | 0 | 253 | 107 | 3806 | |
| 17:30 | 17:45 | 0 | 173 | 99 | 0 | 124 | 255 | 0 | 188 | 122 | 3483 | |
| 17:45 | 18:00 | 0 | 161 | 86 | 0 | 133 | 234 | 0 | 207 | 93 | 3078 | |
| 18:00 | 18:15 | 0 | 121 | 76 | 0 | 145 | 229 | 0 | 169 | 89 | 2743 | |
| 18:15 | 18:30 | 0 | 138 | 79 | 0 | 96 | 188 | 0 | 180 | 98 | | |
| 18:30 | 18:45 | 0 | 81 | 57 | 0 | 73 | 159 | 0 | 130 | 56 | | |
| 18:45 | 19:00 | 0 | 94 | 51 | 0 | 95 | 153 | 0 | 125 | 61 | | |

Intersection of Harris St and Glossop St, North St Ma

GPS -33.76224, 150.78095
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: North St Marys
 Customer: GHD

North: Glossop St
 East: N/A
 South: Glossop St
 West: Harris St

Survey Period AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak AM: 6:45 AM-7:45 AM
 PM: 3:15 PM-4:15 PM



All Vehicles

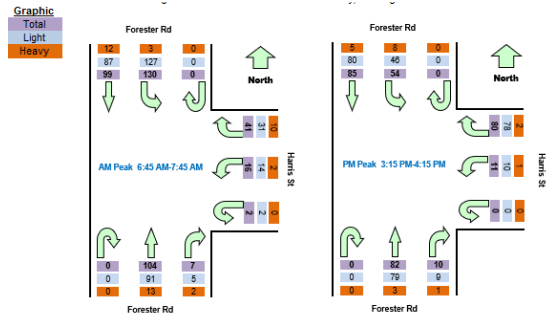
| Time | | North Approach Glossop | | | South Approach Glossop | | | West Approach Harris S | | | Hourly Total | |
|--------------|------------|------------------------|---|-----|------------------------|-----|----|------------------------|---|----|--------------|------|
| Period Start | Period End | U | R | SB | U | NB | L | U | R | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 0 | 214 | 0 | 170 | 25 | 0 | 0 | 2 | 1796 | |
| 6:15 | 6:30 | 0 | 0 | 189 | 0 | 200 | 28 | 0 | 0 | 1 | 1817 | |
| 6:30 | 6:45 | 0 | 0 | 190 | 0 | 236 | 42 | 0 | 0 | 3 | 1898 | |
| 6:45 | 7:00 | 0 | 0 | 207 | 0 | 227 | 55 | 0 | 0 | 7 | 1983 | |
| 7:00 | 7:15 | 0 | 0 | 204 | 0 | 192 | 35 | 0 | 0 | 1 | 2182 | |
| 7:15 | 7:30 | 0 | 0 | 210 | 0 | 243 | 40 | 0 | 0 | 6 | 2375 | |
| 7:30 | 7:45 | 0 | 0 | 266 | 0 | 255 | 29 | 0 | 0 | 6 | 2587 | |
| 7:45 | 8:00 | 0 | 0 | 312 | 0 | 334 | 39 | 0 | 0 | 10 | 2710 | Peak |
| 8:00 | 8:15 | 0 | 0 | 315 | 0 | 275 | 27 | 0 | 0 | 8 | 2648 | |
| 8:15 | 8:30 | 0 | 0 | 382 | 0 | 304 | 19 | 0 | 0 | 6 | 2600 | |
| 8:30 | 8:45 | 0 | 0 | 385 | 0 | 270 | 13 | 0 | 0 | 11 | 2423 | |
| 8:45 | 9:00 | 0 | 0 | 299 | 0 | 315 | 11 | 0 | 0 | 8 | 2253 | |
| 9:00 | 9:15 | 0 | 0 | 291 | 0 | 263 | 10 | 0 | 0 | 13 | 2134 | |
| 9:15 | 9:30 | 0 | 0 | 262 | 0 | 258 | 9 | 0 | 0 | 5 | | |
| 9:30 | 9:45 | 0 | 0 | 277 | 0 | 217 | 9 | 0 | 0 | 6 | | |
| 9:45 | 10:00 | 0 | 0 | 259 | 0 | 242 | 11 | 0 | 0 | 2 | | |
| 15:00 | 15:15 | 0 | 0 | 412 | 0 | 363 | 14 | 0 | 0 | 2 | 3349 | |
| 15:15 | 15:30 | 0 | 0 | 435 | 0 | 391 | 12 | 0 | 0 | 2 | 3413 | Peak |
| 15:30 | 15:45 | 0 | 0 | 438 | 0 | 408 | 6 | 0 | 0 | 15 | 3370 | |
| 15:45 | 16:00 | 0 | 0 | 430 | 0 | 380 | 7 | 0 | 0 | 34 | 3283 | |
| 16:00 | 16:15 | 0 | 0 | 477 | 0 | 357 | 5 | 0 | 0 | 16 | 3257 | |
| 16:15 | 16:30 | 0 | 0 | 444 | 0 | 328 | 4 | 0 | 0 | 21 | 3271 | |
| 16:30 | 16:45 | 0 | 0 | 420 | 0 | 345 | 8 | 0 | 0 | 7 | 3243 | |
| 16:45 | 17:00 | 0 | 0 | 424 | 0 | 372 | 16 | 0 | 0 | 13 | 3173 | |
| 17:00 | 17:15 | 0 | 0 | 395 | 0 | 433 | 11 | 0 | 0 | 30 | 3010 | |
| 17:15 | 17:30 | 0 | 0 | 400 | 0 | 344 | 10 | 0 | 0 | 15 | 2778 | |
| 17:30 | 17:45 | 0 | 0 | 374 | 0 | 318 | 10 | 0 | 0 | 8 | 2613 | |
| 17:45 | 18:00 | 0 | 0 | 295 | 0 | 347 | 5 | 0 | 0 | 15 | 2341 | |
| 18:00 | 18:15 | 0 | 0 | 294 | 0 | 323 | 9 | 0 | 0 | 11 | 2122 | |
| 18:15 | 18:30 | 0 | 0 | 242 | 0 | 344 | 6 | 0 | 0 | 12 | | |
| 18:30 | 18:45 | 0 | 0 | 222 | 0 | 204 | 1 | 0 | 0 | 11 | | |
| 18:45 | 19:00 | 0 | 0 | 189 | 0 | 245 | 2 | 0 | 0 | 7 | | |

Intersection of Harris St and Forester Rd, St Marys

GPS: -33.76121, 150.77498
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: St Marys
 Customer: GHD

| | |
|--------|-------------|
| North: | Forester Rd |
| East: | Harris St |
| South: | Forester Rd |
| West: | N/A |

| | |
|---------------|----------------------|
| Survey Period | AM: 6:00 AM-10:00 AM |
| | PM: 3:00 PM-7:00 PM |
| Traffic Peak | AM: 6:45 AM-7:45 AM |
| | PM: 3:15 PM-4:15 PM |



All Vehicles

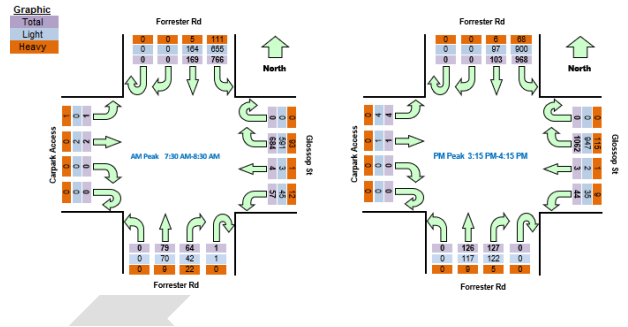
| Time | | North Approach Forester Rd | | | East Approach Harris St | | | South Approach Forester Rd | | | Hourly Total | |
|--------------|------------|----------------------------|----|----|-------------------------|----|---|----------------------------|---|----|--------------|------|
| Period Start | Period End | U | SB | L | U | R | L | U | R | NB | Hour | Peak |
| 6:00 | 6:15 | 0 | 6 | 5 | 1 | 4 | 4 | 0 | 0 | 11 | 238 | |
| 6:15 | 6:30 | 0 | 8 | 11 | 4 | 4 | 4 | 0 | 2 | 15 | 301 | |
| 6:30 | 6:45 | 0 | 12 | 21 | 0 | 11 | 4 | 0 | 1 | 8 | 343 | |
| 6:45 | 7:00 | 0 | 24 | 33 | 2 | 11 | 4 | 0 | 5 | 23 | 399 | Peak |
| 7:00 | 7:15 | 0 | 19 | 34 | 0 | 11 | 5 | 0 | 1 | 24 | 377 | |
| 7:15 | 7:30 | 0 | 25 | 25 | 0 | 9 | 3 | 0 | 1 | 27 | 384 | |
| 7:30 | 7:45 | 0 | 31 | 38 | 0 | 10 | 4 | 0 | 0 | 30 | 351 | |
| 7:45 | 8:00 | 0 | 15 | 21 | 0 | 11 | 5 | 0 | 4 | 24 | 289 | |
| 8:00 | 8:15 | 0 | 30 | 20 | 0 | 15 | 3 | 0 | 3 | 30 | 256 | |
| 8:15 | 8:30 | 0 | 15 | 17 | 0 | 9 | 1 | 0 | 2 | 13 | 203 | |
| 8:30 | 8:45 | 0 | 13 | 11 | 0 | 8 | 2 | 0 | 4 | 13 | 186 | |
| 8:45 | 9:00 | 0 | 9 | 22 | 1 | 5 | 1 | 0 | 1 | 8 | 170 | |
| 9:00 | 9:15 | 0 | 13 | 13 | 0 | 6 | 2 | 0 | 0 | 14 | 154 | |
| 9:15 | 9:30 | 0 | 10 | 11 | 0 | 8 | 0 | 0 | 1 | 10 | | |
| 9:30 | 9:45 | 0 | 10 | 6 | 0 | 7 | 1 | 0 | 2 | 9 | | |
| 9:45 | 10:00 | 0 | 8 | 5 | 0 | 4 | 3 | 0 | 2 | 9 | | |
| 15:00 | 15:15 | 0 | 21 | 9 | 0 | 25 | 1 | 0 | 3 | 18 | 314 | |
| 15:15 | 15:30 | 0 | 28 | 21 | 0 | 13 | 2 | 0 | 2 | 24 | 322 | Peak |
| 15:30 | 15:45 | 0 | 17 | 9 | 0 | 27 | 4 | 0 | 3 | 22 | 288 | |
| 15:45 | 16:00 | 0 | 20 | 11 | 0 | 12 | 3 | 0 | 2 | 17 | 261 | |
| 16:00 | 16:15 | 0 | 20 | 13 | 0 | 28 | 2 | 0 | 3 | 19 | 279 | |
| 16:15 | 16:30 | 0 | 12 | 3 | 0 | 22 | 3 | 0 | 0 | 16 | 274 | |
| 16:30 | 16:45 | 0 | 16 | 7 | 0 | 18 | 0 | 0 | 1 | 13 | 293 | |
| 16:45 | 17:00 | 0 | 14 | 6 | 0 | 35 | 6 | 0 | 3 | 19 | 313 | |
| 17:00 | 17:15 | 0 | 16 | 7 | 0 | 22 | 8 | 0 | 0 | 27 | 318 | |
| 17:15 | 17:30 | 0 | 19 | 4 | 0 | 29 | 2 | 0 | 2 | 19 | 322 | Peak |
| 17:30 | 17:45 | 0 | 16 | 5 | 0 | 24 | 5 | 0 | 2 | 23 | 315 | |
| 17:45 | 18:00 | 0 | 19 | 3 | 0 | 39 | 5 | 0 | 2 | 20 | 285 | |
| 18:00 | 18:15 | 0 | 16 | 7 | 0 | 35 | 2 | 0 | 4 | 20 | 243 | |
| 18:15 | 18:30 | 0 | 13 | 3 | 0 | 31 | 3 | 0 | 2 | 16 | | |
| 18:30 | 18:45 | 0 | 10 | 1 | 0 | 20 | 2 | 0 | 2 | 10 | | |
| 18:45 | 19:00 | 0 | 9 | 0 | 0 | 25 | 1 | 0 | 1 | 10 | | |

Intersection of Glossop St and Forrester Rd, St Marys

GPS: -33.75659, 150.77567
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: St Marys
 Customer: GHD

North: Forrester Rd
 East: Glossop St
 South: Forrester Rd
 West: Carpark Access

Survey Period AM: 6:00 AM-10:00 AM PM: 3:00 PM-7:00 PM
 Traffic Peak AM: 7:30 AM-8:30 AM PM: 3:15 PM-4:15 PM



All Vehicles

| Time | | North Approach Forrester Rd | | | | East Approach Glossop St | | | | South Approach Forrester Rd | | | | West Approach Carpark Access | | | | Hourly Total | |
|--------------|------------|-----------------------------|---|----|-----|--------------------------|-----|----|----|-----------------------------|----|----|---|------------------------------|---|----|---|--------------|------|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 0 | 20 | 135 | 0 | 114 | 2 | 3 | 0 | 8 | 10 | 0 | 0 | 0 | 1 | 0 | 1372 | |
| 6:15 | 6:30 | 0 | 0 | 18 | 117 | 0 | 162 | 3 | 5 | 0 | 10 | 11 | 0 | 0 | 0 | 1 | 0 | 1459 | |
| 6:30 | 6:45 | 0 | 0 | 25 | 113 | 0 | 173 | 0 | 21 | 0 | 7 | 15 | 1 | 0 | 0 | 1 | 1 | 1534 | |
| 6:45 | 7:00 | 0 | 0 | 48 | 133 | 0 | 170 | 0 | 16 | 0 | 10 | 17 | 0 | 0 | 1 | 0 | 0 | 1621 | |
| 7:00 | 7:15 | 0 | 0 | 56 | 143 | 0 | 126 | 2 | 16 | 0 | 12 | 21 | 1 | 0 | 0 | 2 | 1 | 1678 | |
| 7:15 | 7:30 | 0 | 0 | 41 | 143 | 0 | 157 | 2 | 15 | 0 | 24 | 17 | 1 | 0 | 0 | 2 | 0 | 1762 | |
| 7:30 | 7:45 | 0 | 0 | 58 | 170 | 0 | 152 | 2 | 20 | 0 | 21 | 21 | 0 | 0 | 0 | 0 | 0 | 1827 | Peak |
| 7:45 | 8:00 | 0 | 0 | 42 | 180 | 0 | 188 | 0 | 12 | 0 | 12 | 16 | 0 | 0 | 0 | 1 | 1 | 1816 | |
| 8:00 | 8:15 | 0 | 0 | 45 | 202 | 0 | 159 | 2 | 10 | 0 | 18 | 27 | 0 | 0 | 0 | 1 | 0 | 1748 | |
| 8:15 | 8:30 | 0 | 0 | 24 | 214 | 0 | 185 | 0 | 15 | 1 | 13 | 15 | 0 | 0 | 0 | 0 | 0 | 1677 | |
| 8:30 | 8:45 | 0 | 0 | 31 | 206 | 0 | 168 | 1 | 6 | 0 | 9 | 10 | 0 | 0 | 1 | 0 | 1 | 1549 | |
| 8:45 | 9:00 | 0 | 0 | 33 | 155 | 0 | 169 | 1 | 9 | 0 | 8 | 6 | 3 | 0 | 0 | 0 | 0 | 1459 | |
| 9:00 | 9:15 | 0 | 0 | 26 | 167 | 0 | 155 | 1 | 14 | 0 | 14 | 14 | 1 | 0 | 0 | 1 | 0 | 1410 | |
| 9:15 | 9:30 | 0 | 0 | 19 | 131 | 0 | 143 | 0 | 15 | 0 | 15 | 14 | 0 | 0 | 0 | 2 | 0 | | |
| 9:30 | 9:45 | 0 | 0 | 20 | 149 | 0 | 144 | 1 | 8 | 0 | 9 | 12 | 0 | 0 | 0 | 0 | 0 | | |
| 9:45 | 10:00 | 0 | 0 | 6 | 142 | 0 | 155 | 0 | 15 | 0 | 10 | 6 | 0 | 0 | 0 | 1 | 0 | | |
| 15:00 | 15:15 | 0 | 0 | 38 | 231 | 0 | 201 | 0 | 9 | 0 | 34 | 31 | 0 | 0 | 0 | 1 | 1 | 2388 | |
| 15:15 | 15:30 | 0 | 0 | 30 | 223 | 0 | 310 | 1 | 14 | 0 | 17 | 31 | 0 | 0 | 0 | 0 | 0 | 2438 | Peak |
| 15:30 | 15:45 | 0 | 0 | 21 | 236 | 0 | 286 | 0 | 8 | 0 | 44 | 48 | 0 | 0 | 0 | 0 | 0 | 2305 | |
| 15:45 | 16:00 | 0 | 0 | 23 | 249 | 0 | 232 | 1 | 9 | 0 | 28 | 26 | 0 | 0 | 0 | 1 | 4 | 2226 | |
| 16:00 | 16:15 | 0 | 0 | 29 | 260 | 0 | 234 | 1 | 13 | 0 | 38 | 21 | 0 | 0 | 0 | 0 | 0 | 2192 | |
| 16:15 | 16:30 | 0 | 0 | 16 | 234 | 0 | 199 | 0 | 2 | 0 | 20 | 21 | 0 | 0 | 0 | 1 | 0 | 2167 | |
| 16:30 | 16:45 | 0 | 0 | 27 | 264 | 0 | 217 | 2 | 13 | 0 | 19 | 20 | 0 | 0 | 1 | 1 | 0 | 2224 | |
| 16:45 | 17:00 | 0 | 0 | 22 | 201 | 0 | 239 | 0 | 9 | 0 | 36 | 31 | 0 | 0 | 0 | 1 | 0 | 2159 | |
| 17:00 | 17:15 | 0 | 0 | 24 | 197 | 0 | 269 | 0 | 8 | 0 | 42 | 31 | 0 | 0 | 0 | 0 | 0 | 2096 | |
| 17:15 | 17:30 | 0 | 0 | 23 | 217 | 0 | 241 | 0 | 5 | 0 | 25 | 39 | 0 | 0 | 0 | 0 | 0 | 1977 | |
| 17:30 | 17:45 | 0 | 0 | 26 | 189 | 0 | 193 | 0 | 12 | 0 | 46 | 33 | 0 | 0 | 0 | 0 | 0 | 1806 | |
| 17:45 | 18:00 | 0 | 0 | 21 | 156 | 0 | 228 | 0 | 10 | 0 | 33 | 28 | 0 | 0 | 0 | 0 | 0 | 1595 | |
| 18:00 | 18:15 | 0 | 0 | 24 | 149 | 1 | 195 | 0 | 12 | 0 | 39 | 32 | 0 | 0 | 0 | 0 | 0 | 1393 | |
| 18:15 | 18:30 | 0 | 0 | 10 | 131 | 0 | 179 | 0 | 9 | 0 | 23 | 27 | 0 | 0 | 0 | 0 | 0 | | |
| 18:30 | 18:45 | 0 | 0 | 15 | 109 | 0 | 124 | 0 | 5 | 0 | 13 | 22 | 0 | 0 | 0 | 0 | 0 | | |
| 18:45 | 19:00 | 0 | 0 | 5 | 94 | 0 | 128 | 0 | 7 | 0 | 14 | 26 | 0 | 0 | 0 | 0 | 0 | | |

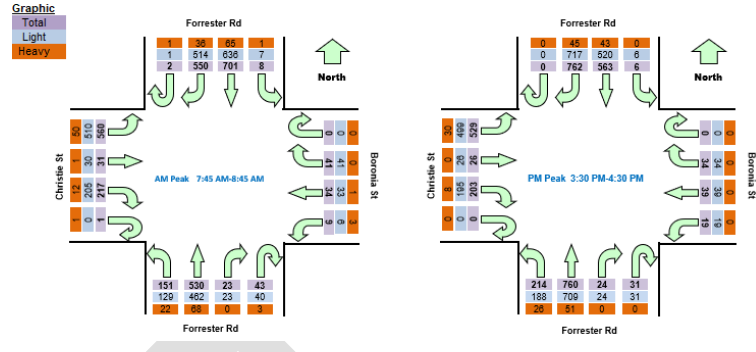
Intersection of Boronia St and Forrester Rd, St Marys

GPS -33.74756, 150.7774

Date: Thu 29/06/23
 Weather: Overcast
 Suburban: St Marys
 Customer: GHD

North: Forrester Rd
 East: Boronia St
 South: Forrester Rd
 West: Christie St

Survey Period AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak AM: 7:45 AM-8:45 AM
 PM: 3:30 PM-4:30 PM



All Vehicles

| Time Period | Start | End | North Approach Forrester Rd | | | | East Approach Boronia St | | | | South Approach Forrester Rd | | | | West Approach Christie St | | | | Hourly Total | |
|-------------|-------|-----|-----------------------------|-----|----|---|--------------------------|----|----|----|-----------------------------|-----|----|---|---------------------------|----|-----|------|--------------|------|
| | | | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 89 | 141 | 4 | 0 | 6 | 4 | 2 | 3 | 6 | 77 | 19 | 0 | 19 | 3 | 107 | 2226 | | |
| 6:15 | 6:30 | 0 | 95 | 133 | 1 | 0 | 5 | 7 | 0 | 5 | 2 | 107 | 22 | 0 | 33 | 4 | 133 | 2335 | | |
| 6:30 | 6:45 | 0 | 119 | 122 | 2 | 0 | 18 | 7 | 2 | 3 | 3 | 119 | 29 | 0 | 31 | 0 | 88 | 2394 | | |
| 6:45 | 7:00 | 0 | 100 | 162 | 3 | 0 | 10 | 11 | 6 | 7 | 6 | 155 | 27 | 0 | 39 | 6 | 124 | 2522 | | |
| 7:00 | 7:15 | 0 | 100 | 164 | 2 | 0 | 12 | 9 | 6 | 7 | 3 | 100 | 28 | 1 | 35 | 2 | 120 | 2557 | | |
| 7:15 | 7:30 | 0 | 131 | 148 | 2 | 0 | 8 | 3 | 1 | 5 | 1 | 106 | 18 | 2 | 41 | 2 | 138 | 2696 | | |
| 7:30 | 7:45 | 0 | 138 | 191 | 1 | 0 | 5 | 9 | 3 | 5 | 2 | 113 | 33 | 1 | 44 | 1 | 125 | 2852 | | |
| 7:45 | 8:00 | 0 | 131 | 168 | 2 | 0 | 8 | 5 | 2 | 9 | 3 | 134 | 28 | 0 | 53 | 6 | 142 | 2901 | Peak | |
| 8:00 | 8:15 | 0 | 142 | 195 | 2 | 0 | 10 | 12 | 3 | 3 | 7 | 121 | 33 | 0 | 57 | 9 | 134 | 2888 | | |
| 8:15 | 8:30 | 1 | 141 | 177 | 2 | 0 | 9 | 7 | 2 | 17 | 6 | 148 | 39 | 0 | 59 | 10 | 144 | 2822 | | |
| 8:30 | 8:45 | 1 | 136 | 161 | 2 | 0 | 14 | 10 | 2 | 14 | 7 | 127 | 51 | 1 | 48 | 6 | 140 | 2631 | | |
| 8:45 | 9:00 | 0 | 143 | 140 | 1 | 0 | 17 | 9 | 2 | 7 | 3 | 122 | 32 | 0 | 53 | 1 | 148 | 2423 | | |
| 9:00 | 9:15 | 0 | 153 | 136 | 2 | 0 | 9 | 8 | 2 | 10 | 4 | 118 | 47 | 0 | 43 | 8 | 122 | 2288 | | |
| 9:15 | 9:30 | 0 | 110 | 100 | 3 | 0 | 12 | 5 | 1 | 7 | 4 | 117 | 40 | 0 | 46 | 8 | 118 | | | |
| 9:30 | 9:45 | 0 | 99 | 117 | 2 | 0 | 11 | 10 | 3 | 8 | 5 | 101 | 32 | 1 | 34 | 4 | 85 | | | |
| 9:45 | 10:00 | 0 | 121 | 89 | 1 | 0 | 11 | 6 | 5 | 10 | 6 | 109 | 45 | 0 | 41 | 1 | 98 | | | |
| 15:00 | 15:15 | 0 | 141 | 155 | 3 | 0 | 6 | 7 | 11 | 7 | 6 | 186 | 33 | 0 | 54 | 3 | 132 | 3170 | | |
| 15:15 | 15:30 | 0 | 167 | 151 | 2 | 0 | 6 | 11 | 5 | 9 | 8 | 192 | 49 | 0 | 38 | 0 | 147 | 3184 | | |
| 15:30 | 15:45 | 0 | 186 | 143 | 1 | 0 | 9 | 8 | 6 | 11 | 5 | 175 | 59 | 0 | 56 | 6 | 149 | 3210 | Peak | |
| 15:45 | 16:00 | 0 | 180 | 149 | 2 | 0 | 9 | 11 | 9 | 8 | 11 | 217 | 47 | 0 | 45 | 7 | 132 | 3160 | | |
| 16:00 | 16:15 | 0 | 203 | 140 | 1 | 0 | 7 | 9 | 3 | 6 | 2 | 170 | 51 | 0 | 44 | 5 | 117 | 3104 | | |
| 16:15 | 16:30 | 0 | 193 | 131 | 2 | 0 | 9 | 11 | 1 | 6 | 6 | 198 | 57 | 0 | 58 | 8 | 131 | 3130 | | |
| 16:30 | 16:45 | 0 | 173 | 144 | 3 | 0 | 8 | 12 | 7 | 3 | 10 | 178 | 54 | 0 | 49 | 8 | 115 | 3129 | | |
| 16:45 | 17:00 | 0 | 163 | 138 | 2 | 0 | 12 | 14 | 5 | 7 | 6 | 195 | 54 | 0 | 45 | 6 | 124 | 3123 | | |
| 17:00 | 17:15 | 0 | 172 | 135 | 1 | 0 | 11 | 12 | 0 | 8 | 16 | 197 | 58 | 0 | 29 | 12 | 133 | 3090 | | |
| 17:15 | 17:30 | 0 | 158 | 163 | 2 | 0 | 10 | 12 | 3 | 13 | 12 | 193 | 53 | 0 | 37 | 15 | 139 | 3003 | | |
| 17:30 | 17:45 | 0 | 152 | 161 | 3 | 0 | 12 | 8 | 4 | 8 | 9 | 183 | 52 | 0 | 40 | 15 | 111 | 2786 | | |
| 17:45 | 18:00 | 0 | 153 | 163 | 2 | 0 | 15 | 5 | 1 | 10 | 16 | 157 | 38 | 0 | 39 | 13 | 126 | 2607 | | |
| 18:00 | 18:15 | 0 | 140 | 141 | 4 | 0 | 12 | 10 | 8 | 14 | 23 | 146 | 45 | 0 | 38 | 18 | 98 | 2375 | | |
| 18:15 | 18:30 | 0 | 141 | 98 | 2 | 0 | 17 | 12 | 8 | 9 | 8 | 133 | 27 | 0 | 39 | 9 | 90 | | | |
| 18:30 | 18:45 | 0 | 133 | 103 | 2 | 0 | 18 | 5 | 11 | 9 | 16 | 117 | 27 | 0 | 36 | 10 | 92 | | | |
| 18:45 | 19:00 | 0 | 107 | 84 | 1 | 0 | 16 | 8 | 4 | 20 | 9 | 106 | 31 | 2 | 29 | 7 | 82 | | | |

Intersection of Christie St and Werrington Rd, Werrington

GPS: -33.75054, 150.75943

| | |
|-----------|--------------|
| Date: | Thu 29/06/23 |
| Weather: | Overcast |
| Suburban: | Werrington |
| Customer: | GHD |

| | |
|--------|---------------|
| North: | N/A |
| East: | Christie St |
| South: | Werrington Rd |
| West: | Dunheved Rd |

| | |
|---------------|---|
| Survey Period | AM: 6:00 AM-10:00 AM PM: 3:00 PM-7:00 PM |
| Traffic Peak | AM: 7:45 AM-8:45 AM PM: 3:30 PM-4:30 PM |



All Vehicles

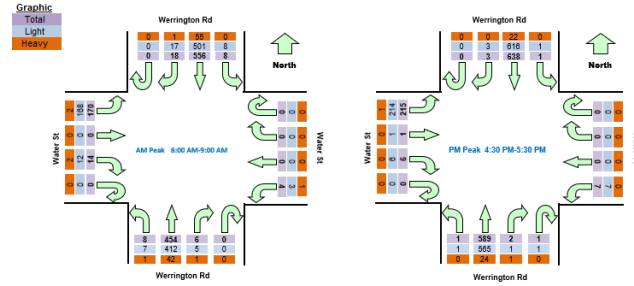
| Time | | West Approach Christie St | | | East Approach Werrington Rd | | | West Approach Dunheved Rd | | | Hourly Total | |
|--------------|------------|---------------------------|-----|-----|-----------------------------|-----|-----|---------------------------|-----|-----|--------------|------|
| Period Start | Period End | U | VB | L | U | R | L | U | R | EB | Hour | Peak |
| 6:00 | 6:15 | 0 | 51 | 29 | 0 | 57 | 19 | 1 | 107 | 101 | 1697 | |
| 6:15 | 6:30 | 0 | 61 | 31 | 0 | 64 | 30 | 0 | 75 | 126 | 1767 | |
| 6:30 | 6:45 | 4 | 75 | 59 | 0 | 66 | 34 | 0 | 79 | 132 | 1922 | |
| 6:45 | 7:00 | 1 | 68 | 69 | 0 | 92 | 35 | 0 | 80 | 151 | 2017 | |
| 7:00 | 7:15 | 1 | 59 | 38 | 1 | 69 | 33 | 0 | 84 | 150 | 2093 | |
| 7:15 | 7:30 | 1 | 84 | 41 | 0 | 94 | 52 | 0 | 101 | 169 | 2226 | |
| 7:30 | 7:45 | 0 | 89 | 61 | 0 | 91 | 37 | 0 | 91 | 175 | 2241 | |
| 7:45 | 8:00 | 0 | 97 | 44 | 0 | 109 | 57 | 1 | 98 | 166 | 2271 | Peak |
| 8:00 | 8:15 | 0 | 90 | 78 | 0 | 82 | 66 | 0 | 87 | 165 | 2265 | |
| 8:15 | 8:30 | 0 | 102 | 58 | 0 | 101 | 65 | 1 | 90 | 140 | 2220 | |
| 8:30 | 8:45 | 2 | 121 | 64 | 0 | 83 | 45 | 0 | 96 | 163 | 2110 | |
| 8:45 | 9:00 | 1 | 93 | 69 | 0 | 100 | 60 | 0 | 94 | 149 | 1926 | |
| 9:00 | 9:15 | 1 | 103 | 69 | 0 | 65 | 74 | 0 | 68 | 143 | 1766 | |
| 9:15 | 9:30 | 1 | 93 | 58 | 0 | 58 | 46 | 0 | 75 | 116 | | |
| 9:30 | 9:45 | 1 | 84 | 54 | 0 | 59 | 41 | 0 | 65 | 86 | | |
| 9:45 | 10:00 | 1 | 105 | 54 | 0 | 44 | 55 | 0 | 48 | 99 | | |
| 15:00 | 15:15 | 1 | 130 | 85 | 0 | 80 | 110 | 0 | 42 | 129 | 2625 | |
| 15:15 | 15:30 | 2 | 150 | 101 | 0 | 79 | 126 | 0 | 69 | 129 | 2772 | |
| 15:30 | 15:45 | 1 | 196 | 135 | 0 | 76 | 116 | 0 | 47 | 140 | 2821 | Peak |
| 15:45 | 16:00 | 2 | 172 | 124 | 0 | 65 | 134 | 0 | 55 | 129 | 2802 | |
| 16:00 | 16:15 | 2 | 183 | 160 | 0 | 80 | 130 | 0 | 60 | 109 | 2795 | |
| 16:15 | 16:30 | 2 | 162 | 156 | 0 | 66 | 111 | 0 | 72 | 136 | 2765 | |
| 16:30 | 16:45 | 0 | 179 | 126 | 0 | 64 | 129 | 0 | 71 | 123 | 2761 | |
| 16:45 | 17:00 | 1 | 186 | 126 | 0 | 62 | 129 | 0 | 63 | 107 | 2730 | |
| 17:00 | 17:15 | 1 | 159 | 135 | 0 | 84 | 146 | 0 | 58 | 111 | 2694 | |
| 17:15 | 17:30 | 0 | 165 | 120 | 0 | 83 | 121 | 0 | 73 | 139 | 2562 | |
| 17:30 | 17:45 | 0 | 177 | 99 | 0 | 60 | 131 | 0 | 61 | 133 | 2399 | |
| 17:45 | 18:00 | 0 | 145 | 95 | 0 | 71 | 147 | 0 | 74 | 106 | 2177 | |
| 18:00 | 18:15 | 2 | 140 | 81 | 0 | 55 | 120 | 0 | 70 | 94 | 1954 | |
| 18:15 | 18:30 | 0 | 112 | 73 | 0 | 47 | 128 | 1 | 71 | 106 | | |
| 18:30 | 18:45 | 0 | 102 | 46 | 0 | 45 | 92 | 2 | 58 | 94 | | |
| 18:45 | 19:00 | 0 | 95 | 56 | 0 | 31 | 97 | 0 | 54 | 82 | | |

Intersection of Water St and Werrington Rd, Werrington

GPS -33.76703, 150.75814
 Date: Thu 29/06/23
 Weather: Overcast
 Suburban: Werrington
 Customer: GHD

North: Werrington Rd
 East: Water St
 South: Werrington Rd
 West: Water St

Survey Period AM: 6:00 AM-10:00 AM
 PM: 3:00 PM-7:00 PM
 Traffic Peak AM: 8:00 AM-9:00 AM
 PM: 4:30 PM-5:30 PM



All Vehicles

| Time | | North Approach Werrington Rd | | | | East Approach Water St | | | | South Approach Werrington Rd | | | | West Approach Water St | | | | Hourly Total | Peak |
|--------------|------------|------------------------------|---|-----|---|------------------------|---|----|---|------------------------------|---|-----|---|------------------------|---|----|----|--------------|------|
| Period Start | Period End | U | R | SB | L | U | R | VB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 2 | 164 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | 0 | 0 | 2 | 1 | 16 | 999 | |
| 6:15 | 6:30 | 0 | 1 | 119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 76 | 1 | 0 | 1 | 0 | 29 | 1026 | |
| 6:30 | 6:45 | 0 | 3 | 133 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 83 | 0 | 0 | 0 | 0 | 42 | 1094 | |
| 6:45 | 7:00 | 0 | 1 | 127 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 98 | 1 | 0 | 3 | 0 | 44 | 1126 | |
| 7:00 | 7:15 | 0 | 3 | 133 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 82 | 1 | 0 | 1 | 1 | 41 | 1161 | |
| 7:15 | 7:30 | 0 | 3 | 157 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 91 | 1 | 0 | 3 | 0 | 39 | 1194 | |
| 7:30 | 7:45 | 0 | 4 | 149 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85 | 1 | 0 | 3 | 0 | 51 | 1217 | |
| 7:45 | 8:00 | 0 | 0 | 143 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 107 | 2 | 0 | 3 | 0 | 51 | 1227 | |
| 8:00 | 8:15 | 0 | 6 | 135 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 102 | 1 | 0 | 4 | 0 | 45 | 1238 | Peak |
| 8:15 | 8:30 | 0 | 7 | 145 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 112 | 1 | 0 | 1 | 0 | 46 | 1211 | |
| 8:30 | 8:45 | 0 | 2 | 139 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 107 | 4 | 0 | 5 | 0 | 43 | 1162 | |
| 8:45 | 9:00 | 0 | 3 | 137 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 133 | 2 | 0 | 4 | 0 | 36 | 1061 | |
| 9:00 | 9:15 | 0 | 6 | 124 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 86 | 2 | 0 | 3 | 0 | 47 | 958 | |
| 9:15 | 9:30 | 0 | 2 | 137 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 96 | 3 | 0 | 4 | 0 | 25 | | |
| 9:30 | 9:45 | 0 | 2 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 71 | 3 | 0 | 2 | 0 | 22 | | |
| 9:45 | 10:00 | 0 | 4 | 87 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 95 | 1 | 0 | 3 | 0 | 26 | | |
| 15:00 | 15:15 | 0 | 3 | 138 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 115 | 4 | 0 | 4 | 0 | 64 | 1364 | |
| 15:15 | 15:30 | 0 | 1 | 173 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 119 | 2 | 0 | 7 | 0 | 73 | 1396 | |
| 15:30 | 15:45 | 0 | 1 | 137 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 140 | 1 | 0 | 3 | 0 | 57 | 1341 | |
| 15:45 | 16:00 | 0 | 0 | 119 | 2 | 0 | 0 | 0 | 1 | 0 | 4 | 124 | 0 | 0 | 1 | 0 | 62 | 1356 | |
| 16:00 | 16:15 | 0 | 2 | 158 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 138 | 0 | 0 | 1 | 0 | 58 | 1393 | |
| 16:15 | 16:30 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 108 | 0 | 0 | 4 | 0 | 61 | 1419 | |
| 16:30 | 16:45 | 0 | 1 | 159 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 138 | 0 | 0 | 1 | 0 | 52 | 1464 | Peak |
| 16:45 | 17:00 | 0 | 0 | 160 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 133 | 0 | 0 | 2 | 0 | 53 | 1451 | |
| 17:00 | 17:15 | 0 | 2 | 153 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 164 | 1 | 0 | 3 | 1 | 63 | 1455 | |
| 17:15 | 17:30 | 0 | 0 | 166 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 154 | 0 | 0 | 0 | 0 | 47 | 1385 | |
| 17:30 | 17:45 | 0 | 0 | 140 | 2 | 0 | 0 | 0 | 6 | 0 | 1 | 143 | 0 | 0 | 2 | 0 | 50 | 1318 | |
| 17:45 | 18:00 | 0 | 0 | 143 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 153 | 0 | 0 | 0 | 0 | 58 | 1227 | |
| 18:00 | 18:15 | 0 | 1 | 122 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 143 | 1 | 0 | 1 | 0 | 48 | 1094 | |
| 18:15 | 18:30 | 0 | 0 | 113 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 145 | 0 | 0 | 2 | 0 | 42 | | |
| 18:30 | 18:45 | 0 | 0 | 107 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 106 | 2 | 0 | 1 | 0 | 36 | | |
| 18:45 | 19:00 | 0 | 1 | 83 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 108 | 0 | 0 | 2 | 0 | 26 | | |

