Traffic Management Plan

Lake Macdonald Dam Improvement Project

Prepared for: Seqwater
7 November 2024
Client Reference No. LMDIP-05806-ROD-TRR-MPL-00001

SMEC INTERNAL REF. 30035740

smec
an SJ company

SMEC simplifies the complex. We unlock the potential of our people to look at infrastructure differently, creating better outcomes for the future.

engineering positive change

Document Control

Document Type	Traffic Management Plan
Project Title	Lake Macdonald Dam Improvement Project
Project Number	30035740
File Location	X:\Projects\300357\30035740\100 Concept-Feasibility\Traffic\Deliverables\
Revision Number	02

Revision History

Revision No.	Date	Prepared By	Reviewed By	Approved for Issue By
01	12/09/2024	Timothy Clune / Henry Strachan RPEQ / Anthony Burke RPEQ	David Edwards RPEQ / TMD #152	Anthony Burke
02	7/11/2024	Anthony Burke RPEQ	David Edwards RPEQ / TMD #152	Anthony Burke

Issue Register

Distribution List	Date Issued	Number of Copies
Seqwater	7/11/2024	Electronic

SMEC Company Details

Approved by	Anthony Burke
Address	Meanjin Country, Level 6, 480 St Pauls Tce, Fortitude Valley, QLD, 4006, Australia
Phone	07 3324 7841 / 0434 101 956
Email	anthony.burke@smec.com
Website	www.smec.com
Signature	

Important Notice

This report is confidential and is provided solely for the purposes of producing a Traffic Management Plan (TMP) for the proposed Lake Macdonald Dam Improvement Project. This TMP is provided pursuant to a Consultancy Agreement between SMEC Australia Pty Limited ("SMEC") and Seqwater, under which SMEC undertook to perform a specific and limited task for Seqwater. This TMP is strictly limited to the matters stated in it and subject to the various assumptions, qualifications and limitations in it and does not apply by implication to other matters. SMEC makes no representation that the scope, assumptions, qualifications and exclusions set out in this report will be suitable or sufficient for other purposes nor that the content of the report covers all matters which you may regard as material for your purposes.

This TMP must be read as a whole. Any subsequent TMP must be read in conjunction with this TMP.

The TMP supersedes all previous draft or interim TMP, whether written or presented orally, before the date of this report. This TMP has not and will not be updated for events or transactions occurring after the date of the report or any other matters which might have a material effect on its contents, or which come to light after the date of the report. SMEC is not obliged to inform you of any such event, transaction or matter nor to update the TMP for anything that occurs, or of which SMEC becomes aware, after the date of this report.

Unless expressly agreed otherwise in writing, SMEC does not accept a duty of care or any other legal responsibility whatsoever in relation to this TMP, or any related enquiries, advice or other work, nor does SMEC make any representation in connection with this TMP, to any person other than Seqwater. Any other person who receives a draft or a copy of this TMP (or any part of it) or discusses it (or any part of it) or any related matter with SMEC, does so on the basis that he or she acknowledges and accepts that he or she may not rely on this TMP nor on any related information or advice given by SMEC for any purpose whatsoever.

Contents

Appendices

Figures

Tables

Abbreviations and Acronyms

Abbreviation / Acronym	Meaning / Definition
% HV	Percentage Heavy Vehicle – percentage calculated to total traffic flows
AADT	Average Annual Daily Traffic
AGTM	Austroads Guide to Traffic Management
AGTTM	Austroads Guide to Temporary Traffic Management
AMS	Activity Management Statements
CG	Coordinator-General
HV	Heavy Vehicle – based on Austroads vehicle class 2-12
LMDIP	Lake Macdonald Dam Improvement Project
LoS	Level of Service
MUTCD	Manual of Uniform Traffic Control Devices
NHVR	National Heavy Vehicle Regulator
NSC	NSC
NWTP	Noosa Water Treatment Plant
OD	origin-destination
OSOM	Over-Mass / Over-Dimensional vehicle
PBS	Performance Based Standard – refer National Heavy Vehicle Regulator
PCNP	Principal Cycle Network Planning
PIA	Pavement Impact Assessment
PPE	personal protective equipment
QGTTM	Queensland Guide to Traffic Temporary Traffic Management
RSA	Road Safety Audit
SAR	Standard Axle Repetitions
SARA	State Assessment Referral Agency
STMP	Site Construction Traffic Management Plan
TGS	Traffic Guidance Scheme
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
TMR	Department of Transport and Main Roads
VMP	Vehicle Movement Plans
VMS	Variable Message Signs

1. Introduction

Seqwater has commissioned SMEC Australia Pty Ltd (SMEC) to produce a comprehensive Traffic Management Plan (TMP) for the Lake Macdonald Dam Improvement Project (LMDIP). The LMDIP is part of Seqwater's broader Dam Improvement Program, aimed at ensuring dams comply with the latest safety standards and continue to function safely during extreme weather events.

Before commencing construction activities, a TMP is required to assess, plan for, and mitigate any unnecessary traffic impacts and safety issues associated with the movement of workers and construction material and equipment to / from and around the site. Stakeholder comments have been addressed in this TMP with endorsement sought.

A previous draft TMP was developed (JH Document Number: JH-PLN-TM-001, dated 28 September 2023)(Refer to TeamBinder reference LMDIP-05242-GNL-TRR-MPL00001). However, after reviewing this draft TMP, Coordinator-General (CG) with key stakeholders of State Assessment Referral Agency (SARA), Department of Transport and Main Roads (TMR), and Noosa Shire Council (NSC) conditioned a more detailed TMP to address additional safety, traffic, and stakeholder concerns, including requirements from the CG' evaluation and related conditions (Coordinator General's Evaluation Report, May 2019).

This TMP provides a more detailed, updated plan that addresses all comments and feedback, integrates all latest information and assessments such as the Traffic Impact Assessment (TIA) and Road Safety Audit (RSA), and considers future project stages.

1.1 Important Note

This TMP has been prepared to cover all external site consideration, impacts and requirements other than all vehicles on site must give way to entering traffic as outlined within this TMP. It does not cover any on site considerations, impacts and requirements as this will be the responsibility of John Holland as the Main Contractor.

Further, John Holland as the Main Contractor will be responsible for the implementation, management and controls as part of the findings and recommendations of this TMP and any imposed conditions from the C-G and Seqwater.

1.2 Project Background

Seqwater's Dam Improvement Program is ensuring its dams comply with the latest safety standards and continue to function safely during extreme weather events in line with regulatory requirements.

The LMDIP will involve building a new spillway and reconstructing the existing earth embankments. The project will reduce risks associated with extreme weather events, achieve regulatory compliance, and ensure the continued reliability of this water source for the Sunshine Coast region for years to come. The project is expected to support 150 jobs throughout construction, with John Holland appointed as the Main Contractor with numerous local subcontractors.

1.3 Objectives

The objectives of this TMP are as follows:

- Ensure a safe and efficient movement of construction-related vehicles and public traffic around the project site.
- Mitigate traffic impacts on local residents, particularly around sensitive areas such as Cooroy State School to minimise disruptions during peak traffic periods.
- Address stakeholder concerns related to heavy vehicle access, road conditions, and the movement of Over-Mass / Over-Dimensional (OSOM) vehicles, if any.

- Comply with all relevant traffic management regulations and guidelines, including but not limited to TMR requirements, *Seqwater's Technical Specifications*, and the CG's conditions.
- Minimise delays to public transport services and prioritise bus movements where feasible.
- Provide clear communication of traffic arrangements to all stakeholders, including the local community, NSC, and relevant state agencies.
- This TMP aims to set out the requirements and methods required to achieve these objectives, through appropriate traffic management methods.

1.4 Related Documents

This TMP should be read in conjunction with the following related documents:

- Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B**.
- Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C**.
- Dilapidation Report for LMDIP (June 2024) – Refer **Appendix D**.
- Road Impact Assessment for LMDIP (December 2020) – scope included TIA, RSA, Pavement Impact Assessment (PIA) and dilapidation survey – extract of PIA section only included as above report supersede the remaining section of the report. Refer **Appendix E**.
- Austroads Guide to Traffic Management (AGTM).
- Austroads Guide to Temporary Traffic Management (AGTTM).
- Queensland Guide to Temporary Traffic Management (QGTTM).
- Australian Standard Manual of Uniform Traffic Control Devices (AS1742).
- TMR Manual of Uniform Traffic Control Devices (MUTCD).

1.5 Conditions and Stakeholder Requirements

1.5.1 Queensland Government – Coordinator General Evaluation and Conditions

The project received approval subject to conditions, following review of the impact assessment report for the project by the Queensland Government – Coordinator General's evaluation report (May 2019).

Following the review and response to safety concerns raised from the public, conditions were imposed and outlined in Appendix 2 of the CG's evaluation report about vehicle access routes, development of an updated TMP in consultation with TMR and NSC, including a road impact assessment which identifies any road upgrade works required by the project (to be considered and approved by relevant road authority). The conditions detailed are outlined in **Appendix A-1** including reference to the section in this TMP where they are addressed or considered.

1.5.2 Department of Transport and Main Roads

1.5.2.1 2021 Comments

Comments were provided by TMR with regards to its review of the completed Road Safety Audit (dated 11 December 2020), Road impact Assessment (dated 8 December 2020) and draft TMP (dated 28 September 2023) for the project in 2021. These comments are outlined in **Appendix A-2** and includes the relevant section where they have been considered and addressed.

1.5.2.2 2024 Comments

TMR provided comments following consultation on the draft TMP for the project. These comments are outlined in **Appendix A-3** and includes the relevant section where they have been considered and addressed.

1.5.3 State Assessment Referral Agency

SARA provided pre-lodgement advice on the updated TMP for the project. These comments are outlined in **Appendix A-4** and includes the relevant section where they have been considered and addressed.

1.5.4 Noosa Shire Council

NSC provided comments on the TMP. These comments are outlined in **Appendix A-5** and includes the relevant section where they have been considered and addressed.

1.6 Stakeholder Consultation

Stakeholder consultation has been a critical part of the development of the TMP for the LMDIP. The consultation process has involved engaging with key stakeholders, including state and local government bodies, educational institutions, and the local community, to ensure that their concerns and requirements are appropriately addressed. This collaborative approach ensures that the TMP aligns with both regulatory requirements and community expectations, aiming to minimise disruption and enhance road safety during the construction period.

The project team including SME and Seqwater have liaised with the following stakeholders during the development of this TMP:

- TMR.
- SARA.
- NSC.
- Cooroy State School.
- Milestones Early Learning Centre.

This TMP reflects the outcome of consultation with key stakeholders, ensuring that their concerns and requirements are addressed. Seqwater and John Holland will continue to engage with these stakeholders throughout the project to ensure that traffic management measures remain effective and aligned with regulatory and community expectations.

1.6.1 Department of Transport and Main Roads

TMR has been involved in reviewing both the initial John Holland TMP and the updated version prepared by SMEC. Key areas of concern from TMR include:

- Ensuring that heavy vehicle access routes are adequately planned and managed to avoid conflicts with local traffic.
- Addressing issues at critical intersections, such as Elm Street and Lake Macdonald Drive, including the need for potential intersection upgrades.
- Monitoring haulage routes to ensure that they perform as expected during construction, with contingency measures in place if issues arise.

TMR's comments from both 2021 and 2024 have been incorporated into this TMP, particularly in regard to traffic management during school drop-off and pick-up times, load limits, and haulage route preferences. SMEC has also identified road upgrades to comply with TMR guidelines. Seqwater and John Holland will continue to liaise with TMR throughout the project to monitor traffic impacts and make adjustments as needed.

1.6.2 State Assessment Referral Agency

SARA provided pre-lodgement advice emphasising the importance of:

- Certifying the TMP through a suitably qualified expert i.e. Traffic Management Design qualified individual.
- Confirming haulage routes and ensuring that construction schedules are aligned with state-controlled road requirements.
- Minimising impacts on the State-Controlled Road network, particularly during school hours and peak traffic periods.

This TMP addresses these concerns in **Section 4**, where the construction traffic management plan is detailed, and mitigation strategies are outlined in **Section 5** to minimise disruptions to traffic flow. Seqwater and John Holland will continue to work with SARA to ensure that any additional traffic management needs are addressed throughout the project.

1.6.3 Noosa Shire Council

As a local authority, NSC's feedback is critical in aligning the TMP with the needs of the local community. Their primary concerns included:

- The potential impact of heavy vehicle movements on local roads, particularly around school zones and residential areas.
- Ensuring that the TMP is compliant with local road management standards and safety requirements.
- Addressing the need for specific road upgrades to accommodate heavy vehicles and construction traffic.

NSC has also requested detailed engineering plans for any road upgrades, which will be submitted for approval before the commencement of construction. The TMP has incorporated NSC's feedback by outlining mitigation measures for reduced heavy vehicle movements during school peaks and recommending no heavy vehicle (HV) route through Cooroy to the south via Myall Street.

1.6.4 Cooroy State School

Cooroy State School is located along a key construction route, and the potential for disruption due to heavy vehicle movements during school hours was identified as a concern. The Main Contractor should work closely with the school to:

- Minimise heavy vehicle movements during peak school hours.
- Ensuring adherence to the school zone 40km/h posted speed limit during peak school hours (7:00 - 9:00 am and 2:00 - 4:00 pm). Minimise noise and dust impacts.
- Ensure clear communication between the project team and school administration, including the use of real-time monitoring and signage to alert the school community of construction activities and potential disruptions.
- Liaise with TMR Road Safety on any near misses or issue. TMR will review the school operations and driver behaviours to provide advice and guidance to the school on any traffic behaviourally issues.

Control measures and mitigation strategies are outlined further in **Section 5**. Ongoing consultation with the school will continue throughout the project to ensure minimal disruption to students and staff.

1.6.5 Milestones Early Learning Centre

Located near key access roads, Milestones Early Learning Centre faces similar concerns to Cooroy State School. The TMP has included measures to:

- Communicate any significant traffic changes to the centre's management, ensuring parents and staff are aware of potential disruptions.
- Minimise noise and dust impacts.

1.6.6 Local Community

Engagement with the local community has been prioritised throughout the TMP development process. The TMP has included measures to:

- Minimise noise and dust impacts.
- Ensuring safe pedestrian access along local roads, particularly near bus stops and recreational areas like Noosa Botanic Gardens.
- Utilising clear signage and communication channels, such as Variable Message Signs (VMS) and community updates, to keep residents informed of construction activities and traffic changes.
- Provide clear signage and direction for users of the Noosa Biosphere Trail Network.

1.7 Additional References

The following references have been reviewed in the preparation of this TMP:

- Transport Operations (Road Use Management) Act 1995.
- Queensland Government – Queensland Globe Web Maps for Existing Transport Network Information (https://qldglobe.information.qld.gov.au/).
- National Heavy Vehicle Regulator (NHVR) website / journey planner.

1.8 Summary of Background Documentation and Policy Review

The development of this TMP for the LMDIP has been guided by an extensive review of relevant background information, policies, and regulatory requirements. This section outlines the key documents and policies that have informed the TMP, ensuring compliance with all necessary guidelines and best practices for managing traffic during construction.

1.8.1 Coordinator General's Evaluation Report (May 2019)

The Coordinator General's Evaluation Report (May 2019) was a critical document that shaped the early stages of the project and set out specific conditions related to traffic and transport management. The key traffic-related conditions include:

- The preparation of a Traffic Management Plan in consultation with NSC (Condition 3).
- Limitations on construction vehicle access routes, with heavy vehicle access restricted to Lake Macdonald Drive (Condition 6).
- The requirement for a Road Impact Assessment to confirm necessary road upgrades prior to construction (Condition 7).

The report also outlined the three key proponents' commitments relating to traffic and driveway access as provided in Table 1–1.

Table 1–1: Proponents' Commitments

Number	Proponent Commitment	IAR Reference	TMP Reference
1	Seqwater will engage with Cooroy State School to identify appropriate mitigation measure/s to reduce traffic noise disturbance to students.	IAR Chapter 12 Table 12-4	For liaison completed refer to **Appendix H** and ongoing commitment refer to **Section 8.3**.

Number	Proponent Commitment	IAR Reference	TMP Reference
2	Seqwater will minimise truck haulage during school pick-up/drop-off periods in consultation with Cooroy State School. Consultation with school communities will include discussion and agreement on suitable mitigation/management, monitoring of effectiveness and adaptation as required.	IAR Chapter 9.4.3	Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** and a summary as outlined on **Section 5.3**.
3	Adequate on-site parking will be provided to accommodate construction worker's vehicles.	IAR Chapter 9.4.3	**Section 3.4.2.2**

These conditions are comprehensively addressed in **Section 4** and **Section 5,** where vehicle access, traffic routes, and road upgrades are detailed. The report's conditions and recommendations are referenced **Appendix A** and provides a detailed breakdown of how each condition is addressed in the TMP.

1.8.2 John Holland Traffic Draft Management Plan (Superseded by Implementation Plan)

John Holland, as the Main Contractor for the LMDIP, prepared an initial TMP dated 28 September 2023 (JH Document Number: JH-PLN-TM-001) and subsequent versions with the latest dated 27 May 2024. While this plan addressed many foundational aspects of traffic management, key stakeholders, including Seqwater, TMR, and NSC, requested a more detailed and comprehensive plan. This TMP builds on the foundation laid by John Holland's TMP, addressing the following key areas:

- More detailed consideration of heavy vehicle movements and alternative routes.
- Additional road impact assessments, particularly focusing on critical intersections such as Elm Street and Lake Macdonald Drive.
- Enhanced stakeholder consultation, particularly with schools and the local community.

1.8.3 Seqwater Technical Specifications

1.8.3.1 TS 1300 Principal's Project Requirements

The Seqwater Technical Specification TS 1300 outlines the John Holland's responsibility for specific safety, traffic management and operational requirements for water infrastructure projects. This specification is particularly important for managing access to the dam site and ensuring compliance with environmental standards during construction.

The TMP aligns with these specifications by ensuring that:

- Heavy vehicle routes are designed to minimise environmental impacts, particularly near sensitive areas such as watercourses and parks.
- Detailed road and pavement impact assessments are conducted to protect the integrity of roads used for construction traffic.

1.8.3.2 TS 1700 Environmental Management Plan

The Seqwater Technical Specification TS 1300 outlines the John Holland's responsibility to identify and undertake reasonable and practicable management measures appropriate to ensure compliance Environmental and Cultural Heritage standards and guidelines. This includes:

- Obtaining relevant approvals and satisfy associated conditions.
- Avoiding causing Environmental Harm.
- Complying with legislative requirements.

2. Existing Conditions

2.1 Subject Site and Locality

Lake Macdonald is located in NSC local government area, approximately 4.5 kilometres north of Cooroy town centre. LMDIP is on the north-western side of Lake Macdonald with public access from Collwood Road (also known as Noosa Water Treatment Plant (NWTP) Access Road) / Lake Macdonald Drive intersection.

As shown in **Figure 2–1,** three sections will be used by construction heavy vehicles during the project:

1. 4.3km section of Lake Macdonald Drive controlled by NSC from Elm Street to the site i.e. Collwood Road.
2. 5.6km section of State Controlled Road 145 consisting of Elm Street / Cooroy Connection Road from Lake Macdonald Drive to the Bruce Highway (10A) Exit 237 (Cooroy Bypass northern interchange).
3. 5.6km section State Controlled Road 142 consisting of Diamond Street / Tewantin Road / Cooroy - Noosa Road from Elm Street to Sivyers Road.

Note, contracts for supply of bulk materials in particular quarried rock and concrete including on site batching material are still in negotiations. As such, the above routes are the most reasonable assumption at the time of writing this report.

The above routes will also be used by workers and in addition two other routes as follows:

1. Southern route via Elm Street and Myall Street to the Bruce Highway Exit 230 (Cooroy Bypass southern interchange) a length of 2.5km.
2. Eastern route for workers to/from Cooroy - Noosa Road includes a 4.9km section of Sivyers Road, Gumboil Road, and Collwood Road (noted as gated and restricted from the public on the eastern side of the NWTP). An alternative to this route from the east is via Swift Drive which is an additional 3km. The Swift Drive route has not been included in this assessment as whilst it is signed as a route to the Noosa Botanical Gardens, community concerns have been raised for its route for the project.

Based on the above routes, four intersections have been assessed in the TIA as follows and illustrated in **Figure 2–1**:

1. Lake Macdonald / Collwood Road.
2. Elm Street / Lake Macdonald Drive.
3. Cooroy - Noosa Road / Sivyers Road.
4. Elm Street / Diamond Street.

Figure 2–1: Site location, project vehicle routes and key intersections

The immediate surroundings of the project include low-density rural residential, state forests and parks and gardens include Noosa Botanic Gardens. This area provides a range of recreational activities including fishing, rowing / watercrafts, trail walking and mountain biking, with picnic areas and a boat ramp located immediately to the south of the site as shown in **Figure 2–2**. Paths along Lake Macdonald Drive interfacing with the Project area are expected to be disrupted during construction. Alternative paths and traffic controls measures are outlined in the TMP and TGS. Access to Collwood Road to/from Cooroy - Noosa Road will be maintained for the public and not impacted by any construction vehicles or activities.

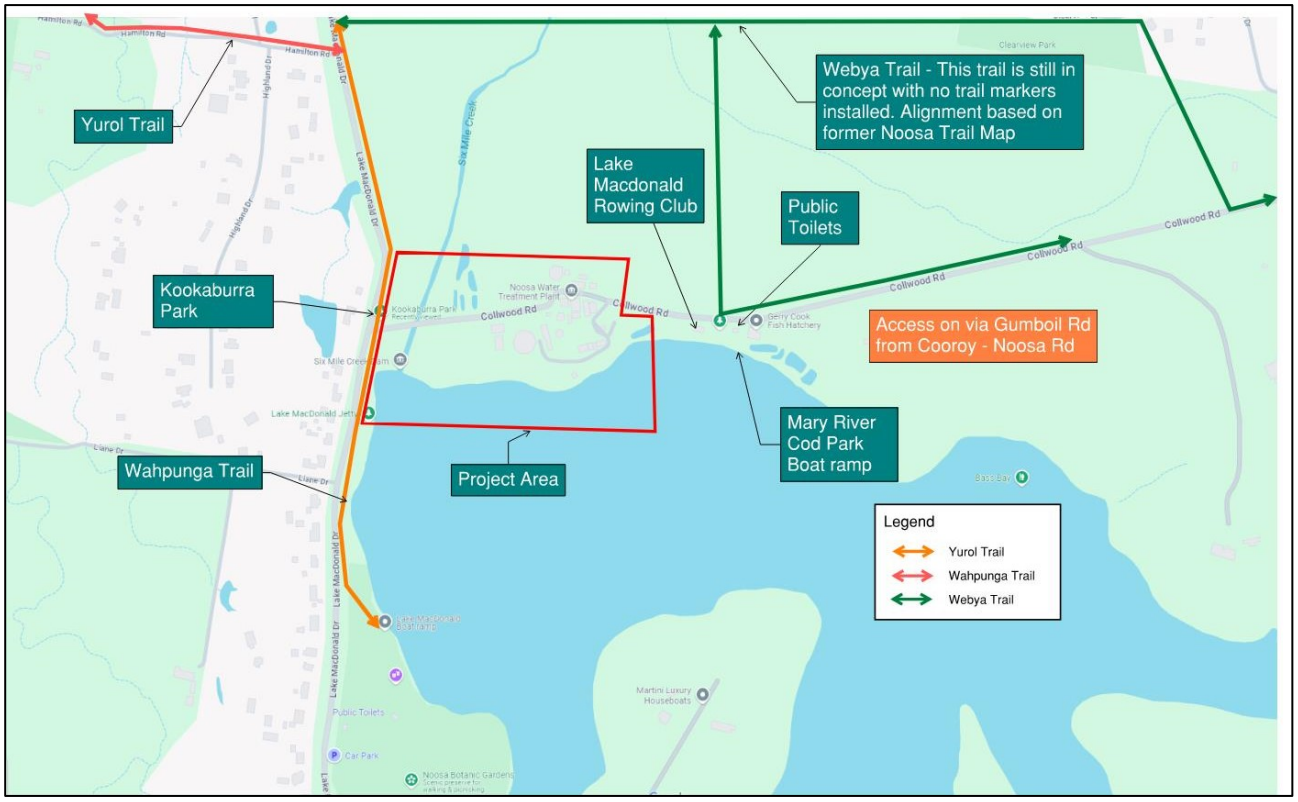

Figure 2–2: Site location and immediate surroundings

2.2 Road Network

The western access to the project site is via an existing driveway at the intersection with Lake Macdonald Drive, which is classified as a two-lane, two-way arterial road. The posted speed limit along the northern approach to this intersection is 80 km/h, while the southern approach has a reduced speed limit of 60 km/h, reflecting the varying traffic conditions and safety requirements in the area.

On the eastern side of the project site, Collwood Road serves as a one-lane, two-way access road that narrows to approximately 4m in pavement width about 1km from its junction with Lake Macdonald Drive. This connects to Gumboil Road, which is a two-lane, two-way access road with a pavement width of approximately 5m, offering comparable access conditions to Collwood Road.

2.2.1 School Bus Routes

A single school bus route operates along Lake Macdonald Drive, locally known as Route S731 (referred to as 792 on Translink's website, with two services per day along Lake Macdonald Drive, with operating times between:

- 7:20 am and 8:05 am
- 3:05 pm and 3:40 pm.

There are bus stops located on Lake Macdonald Drive up to and near the Project site at the following locations:

- Blue Wren Pace

- Racehorse Lane
- Liane Drive
- North of Collwood Road
- Hamilton Road.

This service travels further north and south on Myall Street and Elm Street. It is noted a bus stop with significant school student transfers is located on the western side of Elm Street (northbound) opposite Pearl Street which is within the 40km/hr school zone. A turn-around facility used by buses is located immediately north of the mid-block signalised crossing at Sapphire Street. This stop is within the heavy vehicle eastern route towards Noosa for concrete with very low demands and in short periods requiring regular deliveries for early concrete pours.

2.2.2 Active Transport

TMR Principal Cycle Network Planning (PCNP) includes the following sections:

- Lake Macdonald Drive – Elm Street to Liane Drive
- Elm Street – inter length
- Cooroy – Noosa Road and Tewantin Road – inter length
- Myall Street – inter length.

Cycling infrastructure is limited to short sections of on-road bicycle lanes (unprotected) which are not connected. An on-road bicycle lane is line marked through the Elm Street / Lake Macdonald Drive intersection in the southbound direction sharing the left turn lane on the approach. Several locations have wide shoulders expected to be used by cyclists.

The Noosa Biosphere Trail Network shows the paths of Weyba, Yurol and Wahpunga Trials converge to the north of LDMIP and travel south along Lake Macdonald Drive past Collwood Drive towards Lake Macdonald Park. An older unmarked trail (Trail 4 – Kin Kin to Lake Macdonald) also uses sections of Collwood Road to the east of the LMDIP.

Lake Macdonald Drive has only limited footpaths from Elm Street north to Swift Drive.

2.3 Traffic Conditions

2.3.1 Available Traffic Data

The AM and PM peak periods reflect the busiest times for the local road network, coinciding with school drop-off and pick-up times and residential commuter traffic. These periods typically occur between 7:30 am to 8:30 am in the morning and 2:30 pm to 3:30 pm in the afternoon. Specific peaks for the key intersections from the latest 2024 TIA are:

- Classified intersection surveys with peak periods:
  - Elm Street / Lake Macdonald Drive priority intersection - Tuesday 12 September 2023:
    - AM Peak 7:30 - 8:30am
    - PM Peak 2:45 - 3:45pm
  - Lake Macdonald Drive / Collwood Road priority intersection - Tuesday 12 September 2023:
    - AM Peak 7:30 - 8:30am
    - PM Peak 4:00 - 5:00pm
  - Elm Street / Diamond Street priority intersection – Friday 25 October 2024:
    - AM Peak 7:45 - 8:45am
    - PM Peak 2:30 - 3:30pm

- Cooroy - Noosa Road / Sivyers Road priority intersection: Friday 25 October 2024:
  - AM Peak 7:30 - 8:30am
  - PM Peak 2:45 - 3:45pm

A tube count was also collected on Lake Macdonald Drive between Wednesday 6 and Tuesday 12 October 2023 outside no.407, which is approximately 170m south of Collwood Road.

Average Annual Daily Traffic (AADT) for Queensland State Controlled Roads 2013 to 2023 was gathered as part of the latest TIA to review background growth rates on State Controlled Roads.

2.3.2 Crash History

A review of the crash history for non-fatal casualty from 1 December 2018 to 30 November 2023 and fatal crashes from 1 December 2018 to 30 April 2024 of the key intersections and routes for both construction vehicles and workers to/from the LMDIP site was completed and reported in the updated TIA (November 2024). The review showed no black spots or black lengths on the study area.

Of note, no crashes were recorded at Elm Street / Lake Macdonald Drive or Lake Macdonald Drive / Collwood Road intersections. Further, the two rear end crashes at Cooroy - Noosa Road / Sivyers Road intersection pre 2022 were prior to the line-marking upgrade of a basic auxiliary right turn competed in late 2022.

2.4 Future Road Upgrades

In liaison with TMR, it was confirmed that there are no Category D (protected and funded) or Category C (protected but unfunded) projects in the township of Cooroy.

There is early category B planning in the Elm Street / Diamond Street area, but nothing funded or planned for delivery in the short to medium term, i.e., within the LDMIP construction program dates.

The Elm Street / Lake Macdonald Drive priority intersection is within a category A mapped area which covers the full length of the State Controlled roads between Cooroy and Pomona. There is no active planning being undertaken for the Elm Street / Lake Macdonald Drive priority intersection.

2.5 Summary

The road network surrounding the LMDIP consists of State Controlled Roads and local council-managed roads. **Table 2–1** summarises the existing conditions of key roads providing access to and from the LDMIP.

Table 2–1: Summary of existing road conditions

Transport element	Bruce Highway	Cooroy Connection Road (N) – links with Elm Street	Myall Street - links with Elm Street	Elm Street	Cooroy - Noosa Road (at Sivyers Road)	Lake Macdonald Drive	Sivyers Road	Gumboil Road	Collwood Road (east of NWTP)
Speed limit (km/h)	100	80	50 / 60 (with 40 zones for school areas)	60 (with 40 zones within school area)		80 / 60 (with 40 zones for school area at Elm Street intersection)	70	60	Unsigned – assumed 50
Classification	Highway	Secondary	Secondary	Secondary	Secondary	Connector	Unclassified – assumed local/neighbourhood	Unclassified – assumed local/neighbourhood	Unclassified – assumed local/neighbourhood
Managed by	State Controlled	State Controlled	State Controlled	State Controlled	State Controlled	Noosa Shire Council	Noosa Shire Council	Noosa Shire Council	Noosa Shire Council
Driving lanes width (m)	7.4m (each carriageway)	6.8	7.3	6.8		5.5 to 6.6	6.1	5.5	~4.0m (unsealed)
Shoulder widths (m)	3.0m each side of carriageway	2.0	Varies – nil to 4.5m (at parking locations)	Varies – nil to 3.0m	1.0	Varies – nil to 1.0m	Nil	Nil	Nil
Total number of traffic lanes	Four	Two	Two	Two	Two	Two	Two	Two	Two
Traffic control	Interchange with Cooroy Connection Road / Old Bruce Highway	Interchange with Old Bruce Highway and onwards to Bruce Highway	Roundabout onwards to Bruce Highway Priority with Elm Street	Key priority intersections with Myall Street, Tewantin Road and Lake Macdonald Drive.	Priority with Sivyers Road	Priority with Elm Street	Priority with Cooroy Noosa Road Priority with Gumboil Road	Priority with Gumboil Road	Priority with Lake Macdonald Drive, Gumboil Road, and Clearview Drive
Principal Cycle Network	No	No	Yes	Yes - Connects with Yurol Forest Drive.	Yes	Yes - From Elm Street to Liane Drive	No	No	No
Bicycle facilities	Nil - Cyclists not permitted	Nil - Cyclists can use sealed verge, some minor lane provision through intersection with Gudgerie Drive.	Nil - Cyclists can use sealed verge	Yes – on-street bicycle lanes provided, some are not interconnected along the whole route.	Nil – wide shoulders along some sections of road.	Nil - Cyclists can use sealed verge / parking lanes, some informal lanes provided across intersections but no bicycle markings.	Nil	Nil	Nil
Pedestrian facilities	Nil - Pedestrians not permitted	No	Yes - near several residential land uses, however sporadic and not well connected.	Yes – mainly on its eastern side providing links to residential land use. Pedestrian Operated Signal (POS) located 49m north of Pearl Street, providing a safe crossing link to Cooroy State School. Uncontrolled crossing with median located opposite the Cooroy State School playing fields. Uncontrolled crossing with median break located 96m north of Gem Street, provides links to bus stops.	Nil	Yes	Nil	Nil	Nil
Bus routes / facilities	631	No	No	631 and 632 bus route, and local bus route with bus stops located on both sides of Elm Street 96m north of Gem Street.	631 and 632 bus routes	School bus route with bus stops located: The Lake Macdonald Drive boat ramp The northern corner of Lake Macdonald Drive and Hamilton Road The corner of Lake Macdonald Drive and Forest Acres Drive.	School bus route – TBC	School bus route - TBC	No
B-Double approved route	25/26m B-double and (PBS Level 2A route)	No approved route shown in Qld Globe, however, signage observed in both directions “Cane trucks next 3km, 25m long”.	25/26m B-double and (PBS Level 2A route) – up to intersection with Elm Street	25/26m B-double and (PBS Level 2A route) – from Myall Street to Lake Macdonald Drive. Also no approved route shown in Qld Globe north of Macdonald Drive, however, signage observed in both directions “Cane trucks next 3km, 25m long”	No	25/26m B-double and (PBS Level 2A route) – note route terminates at the disused Quarry (access 295m northeast of Swift Drive).	No	No	No

3. Proposed Project

3.1 Overview

The design for the new dam wall at Lake Macdonald is a split-level concrete spillway (see **Figure 3–1**).

The earth embankments will be reconstructed to their original level on either side of the spillway. Scour protection will be an addition, with rocks placed downstream of the spillway to prevent erosion.

An outlet tower will be constructed to the left side of the spillway which will have mechanical pipework and electrical components to facilitate both emergency release of water, to lower the dam reservoir, and environmental flows to the downstream Six Mile Creek.

At completion of the project, the new dam will have the same storage volume and full supply level as the existing dam (storage to 8,000ML).

Figure 3–1: Proposed Dam Upgrades

Source: https://www.seqwater.com.au/project/lake-macdonald-dam-improvement-project)

3.2 Construction Staging

The construction of the project as detailed in the Contract Agreement covers the construction staging as outlined in **Table 3–1** which has been extracted from the John Holland programme, dated 31 July 2024 - Refer **Appendix E**.

Table 3–1: Construction staging

Stage	Work Stage and Dates	Details
1	Pre-construction approvals, procurement, and site establishment • Start date: November 2024 • End Date: February 2025	• Approvals and Permits: Finalising all necessary regulatory approvals and permits required to commence construction. • Procurement: Securing contracts for major construction materials, equipment, and subcontractors. • Site Establishment: – Mobilisation of construction teams and equipment to the site. – Setting up site offices, worker amenities, and storage facilities.

Stage	Work Stage and Dates	Details
		– Construction of temporary access roads and upgrades to existing roads to accommodate construction traffic. • Environmental Controls: – Implementation of erosion and sediment control measures. – Installation of site fencing and signage. – Inductions and training for all site personnel on environmental and safety requirements. • Aquatic Fauna Salvage (**Dam Safety Related**): – Implement fish and aquatic fauna salvage operations to relocate species from affected areas. – Collaboration with environmental specialists to ensure compliance with environmental management plans.
2	Reservoir lowering and aquatic salvage • Start Date: March 2025. • End Date: April 2025.	• Reservoir Lowering: – Gradual reduction of the water level in Lake Macdonald to a predefined level (e.g., RL93m) to facilitate safe construction conditions. – Continuous monitoring of water levels and downstream flow rates. • Environmental Monitoring: – Water quality testing and reporting. – Implementation of measures to minimise impacts on aquatic ecosystems. • Aquatic Fauna Salvage (**Monitoring and Continued**): – Implement fish and aquatic fauna salvage operations to relocate species from affected areas. – Collaboration with environmental specialists to ensure compliance with environmental management plans.
3	Cofferdam, spillway demolition and working platform • Start Date: April 2025. • End Date: May 2028.	• Cofferdam Construction: – Installation of temporary sheet pile cofferdams upstream of the existing dam to create a dry work area. – Diversion of low flows through designated channels to manage water ingress. • Spillway Demolition: – Demolition of the existing spillway structure, including concrete removal and disposal. – Excavation works to remove portions of the left and right embankments as required. • Working Platform Establishment: – Construction of stable working platforms to support heavy machinery and construction activities. – Implementation of safety measures for working at heights and near water.
4	Dam construction • Start Date: May 2026. • End Date: March 2028.	• Foundation Works: – Excavation to foundation levels and preparation of foundation surfaces. – Installation of foundation drainage and grout curtains as necessary. • Spillway Construction: – Construction of the new split-level concrete spillway and upper labyrinth structure. – Placement of mass concrete and installation of reinforcement steel. – Construction of spillway wing walls and stilling basin. • Embankment Reconstruction:

Stage	Work Stage and Dates	Details
		– Reconstruction and reinforcement of the left and right earth embankments. – Installation of filter buttresses and erosion protection measures. – Compaction and profiling to design specifications. • Outlet Works: – Installation of new outlet pipes, valves, and control systems. – Integration with existing infrastructure and the Noosa Water Treatment Plant. • Monitoring and Quality Control: – Regular inspections and testing to ensure construction to meet design standards. – Documentation and reporting for compliance purposes.
5	Reinstatement, rehabilitation and demobilisation • Start Date: March 2028. • End Date: November 2029.	• Site Rehabilitation: – Removal of temporary structures such as cofferdams, access roads, and facilities. – Reinstatement of natural landforms and re-vegetation with native species. – Restoration of impacted aquatic and terrestrial habitats. • Demobilisation: – Demobilisation of construction equipment and personnel from the site. – Final site clean-up and waste disposal in accordance with environmental regulations. • Final Testing and Commissioning: – Testing of dam structures and mechanical components. – Filling of the reservoir to operational levels under controlled conditions. – Monitoring for any signs of structural issues or environmental impacts. • Handover: – Preparation of as-built drawings and documentation. – Formal handover of the upgraded dam to Seqwater operations. – Engagement with stakeholders and the community to communicate project completion.

3.3 Construction Work Hours

The standard construction hours for the project will follow regulatory guidelines to minimise impacts on the community. The designated hours will be as follows:

- Monday to Friday: 6:30 am to 6:30 pm.
- Saturday: 6:30 am to 4:00 pm.
- Sundays and Public Holidays: No construction work is permitted unless specific permits or approvals are obtained for critical activities.

3.4 Project Traffic

The LMDIP will introduce significant light and heavy vehicle traffic for the overall project duration due to the transportation of construction materials, equipment, and workforce to and from the site. Most light vehicles will be workers arrival and departing site outside road network peak periods whilst heavy vehicle traffic will be low numbers but regular throughout the permitted working hours.

This section outlines the expected construction traffic volumes, vehicle types, and the corresponding impacts on the local road network.

3.4.1 Heavy Vehicles

3.4.1.1 Vehicle types

The construction vehicle types have been consolidated into groupings to aid with traffic generation and vehicle route assessments by their anticipated size, as shown in **Table 3–2**.

Table 3–2: Construction Traffic classification consolidation

Vehicle type	Sub-vehicle type	Vehicle classicisation	Vehicle length (based upon classification)	Vehicle weight
Light vehicles	Private car	99th percentile passenger vehicle	5.2m	N/A
	Utes			
Heavy vehicles	General purpose vehicle	Small Rigid Vehicle	6.4m	2-5 tonnes
	Rubbish truck	Medium Rigid Vehicle	8.8m	10 tonnes
	Concrete truck		8.8m (3.9m high)	32 tonnes
	Rigid truck	Heavy Rigid Vehicle	12.5m	15 tonnes
	Semi-trailers	Articulated Vehicle	19.0m	24 – 42.5 tonnes depending on axle configuration
	Truck and Dog			30 tonnes

OSOM vehicles are also required for the Project, however, the configurations of these vehicles are unknown at this stage. Refer to **Section 7.5** for control measures.

3.4.1.2 Heavy Vehicle Routes

Lake Macdonald Drive will serve as the access route for construction traffic. This road is a critical corridor for transporting construction materials, machinery, and workers to and from the site. Lake Macdonald Drive connects to Elm Street for distribution north to/from the Bruce Highway and east/west via Cooroy - Noosa Road.

Figure 3–2 illustrates the heavy vehicle routes as follows:

- Lake Macdonald Drive controlled by NSC from Elm Street to the site i.e. Collwood Road.
- Elm Street / Cooroy Connection Road which is State Controlled Road 145 from Lake Macdonald Drive to the Bruce Highway (10A) Exit 237 (Cooroy Bypass northern interchange).
- Diamond Street / Tewantin Road / Cooroy - Noosa Road which is section State Controlled Road 142 from Elm Street past Sivyers Road towards Noosa.

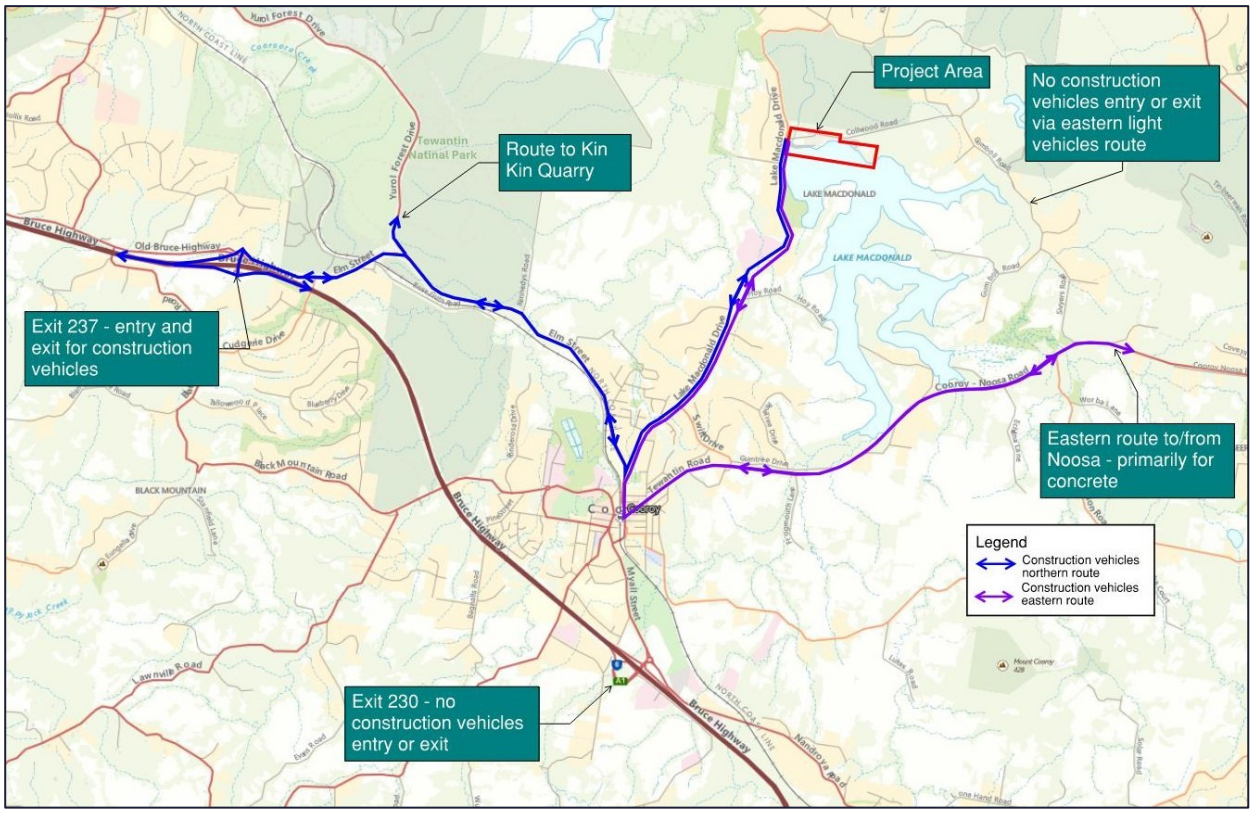

Figure 3–2: Construction Heavy Vehicle Routes

3.4.1.3 Hours of Operation

Heavy vehicle movements are understood to be required to be *minimised* during school pick-up/drop-off times and associated school bus route running times should the route transverse Elm Street to and along Lake Macdonald Drive.

- Accordingly, heavy vehicle movements are recommended to be minimised, *where possible*, during school term dates during the following times based on the TIA assessment of school bus times and traffic flows at the Elm Street / Lake Macdonald Drive intersection (considering both October 2020 and October 2023 traffic surveys):
  - 7:20 - 8:45am
  - 2:30 - 3:45pm.
- Based on the above restricted periods and a finishing time of 5:00pm for heavy vehicle movements to be conservative, this equates to a total heavy vehicle movement/delivery window of 7 hours 50 minutes.
- During School Holidays: Monday to Friday: 6:30 am to 6:30 pm.

It should be noted, it is not practical for critical works such as concrete pours to have heavy vehicles restricted during the above times as they need regular movements to / from the site. Further, to reduce the length of the program and duration of impacts, key work elements are proposed to continue during these restricted times but reduced flows.

3.4.1.3.1 Reduced Movements During School Peaks

Project related heavy vehicle movements will be minimised to a maximum of *six* two-way movements during school peak traffic time (7:20 am to 8:45 am and 2:30 pm to 3:45 pm) to reduce any impacts with school traffic, particularly near Cooroy State School and Milestones Early Learning Centre. This equates to one heavy vehicle entering the site every 20 minutes and one exiting the site every 20 minutes noting this is split between the northern and eastern routes as noted in the TIA.

As shown in **Figure 3–4**, all efforts have been undertaken in logistics planning of the Project to minimise heavy vehicle movements during school peaks with many months (15 months) with no heavy vehicle movements at all and an average of less than two heavy vehicle movements for the remaining months.

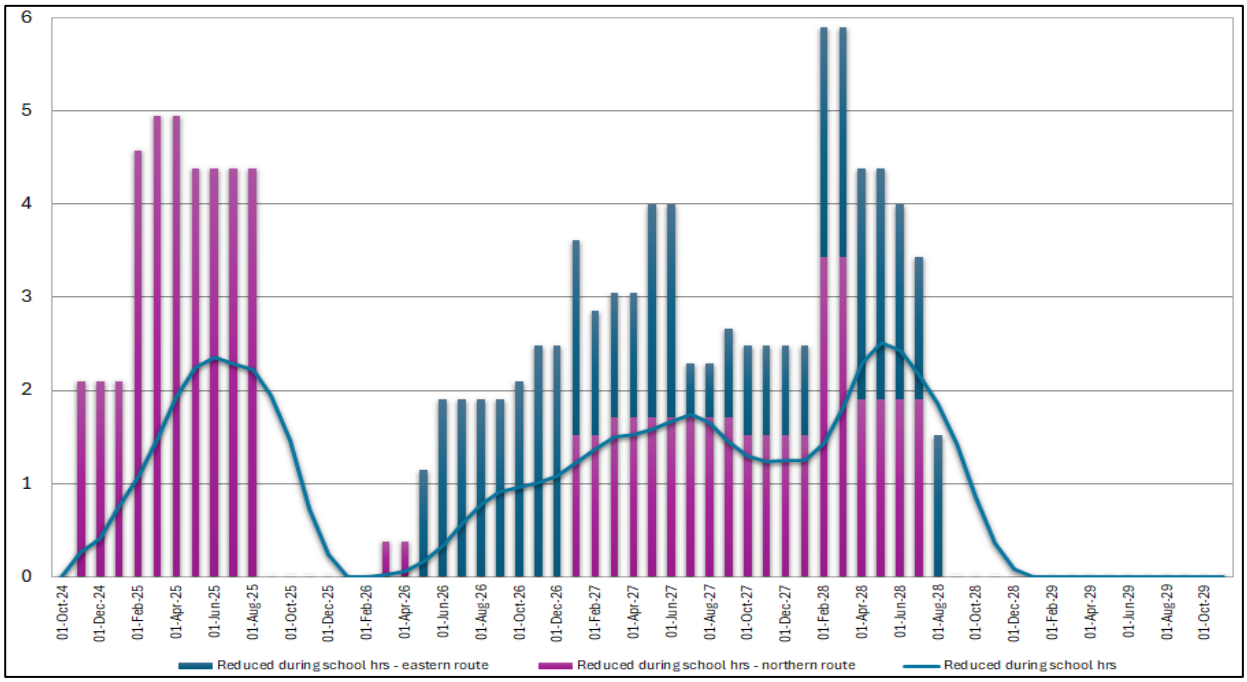

Figure 3–3: Reduced heavy vehicle two-way flows during school peaks

The above figure demonstrates heavy vehicle flows will be minimised during school peaks with control measures outlined in **Section 7.3** and **Section 7.4**, and addresses the Proponent's Commitment Number 2. Further, **Section 8.2.2.3** provides key monitoring via technology to assist on ensuring the Projects commitment to reducing community impacts.

3.4.1.4 Estimated Heavy Vehicle Trips

During peak construction periods, based on the assumption of a five-day work week and hours above, the estimated peak hour flow for heavy vehicles is 21 two-way movements (rounded up to be conservative). **Figure 3–4** provides the daily average two-way heavy vehicle movements per day, noting the split between the northern and eastern routes and for reduced or restricted school hours are also shown.

Across the whole Project duration, the average hourly heavy vehicle movements are ten two-way (five in and five out). This equates to one heavy vehicle entering the site every 12 minutes and one exiting the site every 12 minutes.

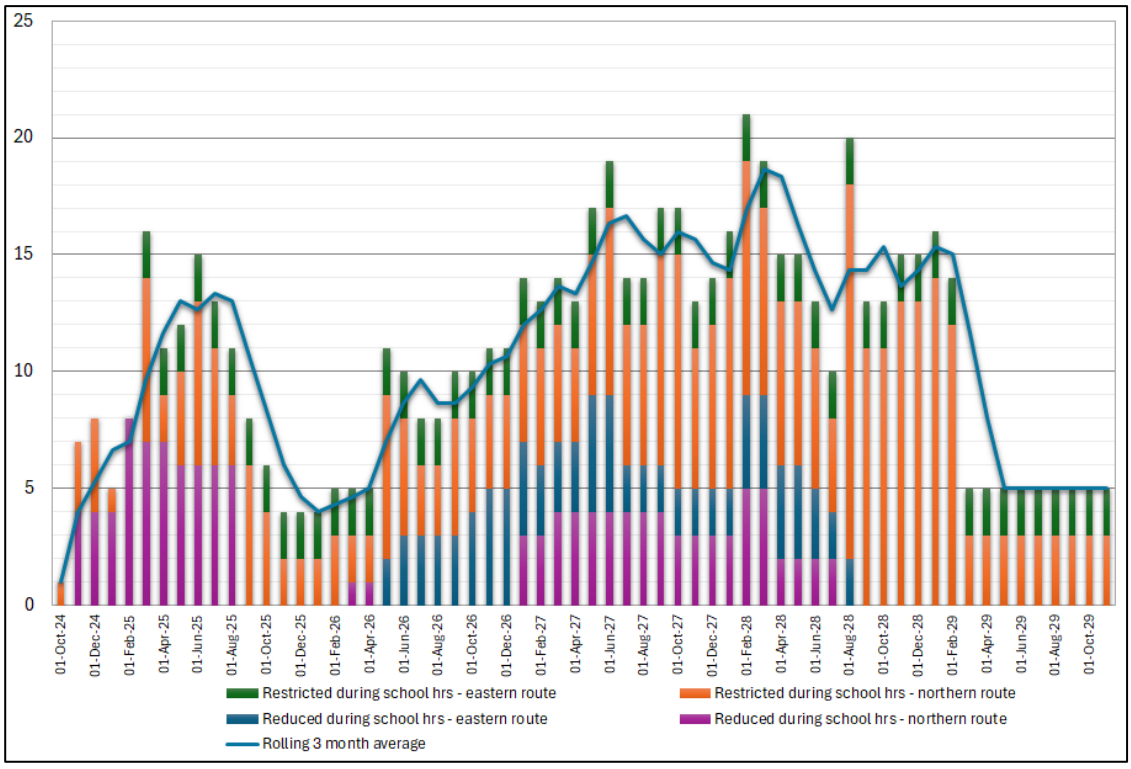

Figure 3–4: Heavy vehicle flows two-way by month by route and reduced or restricted school hours

3.4.2 Light Vehicle Movements

3.4.2.1 Estimated Daily Trips

In addition to heavy vehicles, there will be an increased number of light vehicle movements associated with construction workers commuting to and from the site. The TIA estimates an average of 140 light vehicle trips per day one-way during the peak construction periods (over three-month average). Refer to **Figure 3–5** and **Table 3–3** which also includes the average for the Project of 72 construction workers vehicle trips each way per day.

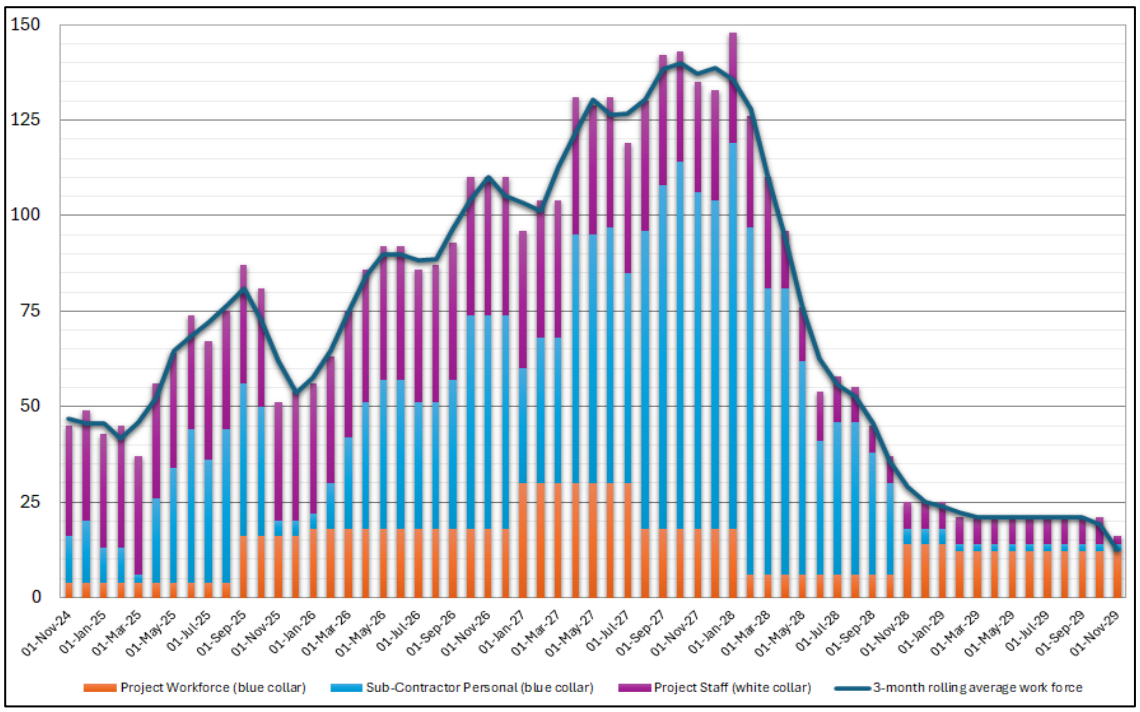

Figure 3–5: Workers by Month

These demands will have different arrival and departure times based on worker type, i.e. white collar or blue collar as shown in **Table 3–3** and will avoid any impacts during school pick-up and drop-pick up periods as required by the Coordinator-General (OCG) evaluation report on the impacts assessment report (2019).

Table 3–3: Project workers arrival and departure times, peak numbers

Worker Type	Arrival Time	Departure Time	Peak Month	Peak 3-month Average	Project Average
Project Staff (white collar)	6:00 - 6:30 AM	6:00 - 6:30 PM	29	31	25
Project Workforce (blue collar)	5:30 - 6:30 AM	5:00 - 6:00 PM	18	18	14
Sub-Contractor Personal (blue collar)	6:00 - 6:30 AM	5:00 - 5:30 PM	101	91	34
Total			**148**	**140**	**72**

It is expected that construction workers travelling to and from the site will be distributed as follows:

- 60% (~84 workers) from Sunshine Coast (entering site locally via Elm Street south, and Lake Macdonald Drive).
- 20% (~28 workers) from Noosa (entering site locally via Cooroy - Noosa Road and Sivyers Road).
- 20% (~28 workers) from Gympie (entering site locally via Elm Street north, and Lake Macdonald Drive).

3.4.2.2 Workforce Parking

On-site parking of up to 150 spaces will be provided for construction workers to prevent any pressure on parking external to the site. Additionally measures such as carpooling for workers will be encouraged and set number of on-site parks will be within each subcontractors' agreements to reduce traffic volumes and alleviate parking demands.

The provision of 150 car parking spaces plus the control measures outlined in **Section 7.9**, addresses the Proponent's Commitment Number 3.

4. Road Impact Assessment

The construction of the LMDIP will significantly increase movements of heavy and light vehicles over the construction period. However, due to the movement of workers generally outside peak times (Refer **Section 2.3**), and heavy vehicles movements being low but regular hourly flows, the assessment found Project vehicles will have minimal impact on the operation and performance to the road network. This is with the exception of two existing deficiencies in the road network that will be impacted further by Project vehicle as highlighted below.

It should be noted that the assessment was also very conservative as it assessed the peak construction period in Mid-2028 and not the average for the whole Project which as noted is approximately half the construction peak.

This section summarises the findings of the following assessments:

- TIA included in **Appendix B**.
- RSA included in **Appendix C**.
- Dilapidation included in **Appendix D**.
- PIA included in **Appendix E**.

4.1 Impact on Local Traffic

SIDRA analysis has been completed based on existing base flows and a growth rate of 1.5% compound per annum applied to generate 2028 without project flows as the Project has a peak in mid-2028. It evaluated four intersections reviewing performance parameters such as degree of saturation (DoS), queue length, level of service (LoS), and delays.

The analysis confirmed that the intersections will maintain satisfactory traffic flow, ensuring minimal disruption to local traffic and road users throughout the construction phase during peak worker and construction vehicle periods. This is with the exception of Elm Street / Diamond Street as detailed further below.

4.1.1 Intersection Impacts

4.1.1.1 Lake Macdonald Drive / Collwood Road

This intersection is projected to perform within capacity under the assessed forecast traffic demands, with capacity to spare. Construction vehicle warning signage will be necessary to manage traffic flow and reduced speed limits (maximum of 40 km/h) during operating times during the construction phase.

4.1.1.2 Elm Street / Lake Macdonald Drive

This intersection is projected to perform within capacity under the assessed forecast traffic demands, with capacity to spare. Projected delays are not expected to adversely affect the capacity of the intersection, and the intersection is projected to operate within acceptable limits during the construction phase.

4.1.1.3 Cooroy - Noosa Road / Sivyers Road

This intersection is projected to perform within capacity under the assessed forecast traffic demands (light vehicles only), with capacity to spare during the construction phase.

4.1.1.4 Elm Street / Diamond Street

Analysis of the Elm Street / Diamond Street intersection shows it is approaching typical acceptable DoS of 0.8 for a priority intersection. The combined through and right turn lane from Diamond Street to Elm Street northbound is the critical lane with a DoS of 0.74 in the heavy vehicle AM peak between 10:15 – 11:15 am.

The Project peak heavy vehicle generation will only have seven two-way movements and an average of four (rounded up) two-way movements for the whole construction period. These additional movements are less than

1% of the base background movements and thus it is not reasonable for the Project to mitigate this intersection given its base scenario deficiency.

Whist TMR has advised there are no committed or funded projects within Cooroy in the short term, a sensitivity test of a minor upgrade to the Elm Street left turn into Diamond Street as a slip lane showed improved results. The sensitivity test was simply a SIDRA assessment, and no consideration of geometry and other impacts has been considered.

An alternative route during periods with high congestion may be to consider Swift Drive, however, this is not recommended as it may create noise complaints by residents along the route.

4.2 Swept Path Assessment

4.2.1.1 Lake Macdonald Drive / Collwood Road

The assessment for semi-trailers shows both the right turn entering and left turn exiting cross over the centreline. Truck and dog heavy vehicles will have sufficient clearance to each other up to the western side of the no public access hatching.

As such, exiting vehicles will need to be held on site and give way to entering vehicles by traffic controllers.

4.2.1.2 Lake Macdonald Drive / Handstand Area 3

Due to the limited area for manoeuvring, this area will only be accessed by truck and dog heavy vehicles. Also, the access width has been designed for a single vehicle to enter or exit at one time to reduce the impact of vegetation clearing and due to the physical constraints of the left embankment.

As such, exiting vehicles will need to be held on site and give way to entering vehicles by traffic controllers.

4.2.1.3 Elm Street / Lake Macdonald Drive

The assessment for semi-trailers shows both the left turn in from Elm Street and right turn from Lake Macdonald Drive cross over the Lake Macdonald Drive centreline. Further, semi-trailers turning left also cross over the road centreline on the existing intersection. This is an existing deficiency, however, there are limited existing heavy vehicles undertaking these manoeuvres.

In the Early stage between November 2024 to 28 February 2025, stop/go traffic management as shown in **Appendix G-1** is proposed due to the limited planned semi-trailer numbers.

For the main works commencing March 2025 with the increased number of semi-trailers, this intersection will need an upgrade constructed or at least commenced to allow semi-trailer swept paths not to cross the opposite side of Lake Macdonald Drive.

4.3 Turn Warrant Assessment

The assessment of the Lake Macdonald Drive / Collwood Road intersection suggests a BAR may be installed, however, given the Project will install a works zone with a speed reduction to 40km/h and traffic controllers will manage flows and safety of all road users, this upgrade it is considered necessary during works. Further, the following issues have also been considered and thus a BAR is not recommended:

- Additional road width will impact the western verge width will be required for the detour of walkers on the Noosa Trail Network unless clearing of mature trees occurs.
- Lake Macdonald Drive will need to be reduced to a one-way arrangement for several months during the demolition and re-construction of the left embankment – Refer to **Section 4.6.4 4.6.3**for additional information.

4.4 Road Safety Audit

The below summarises key points found by the RSA for the key intersections relevant to the Project. Other items raised such as vegetation trimming, worn / missing/ damaged linemarking, signage and delineators, etc. should be considered and rectified by relevant road asset owner.

4.4.1 Lake Macdonald Drive / Collwood Road

- A large tree and signage placement on the northern eastern side of the intersection obstructs sight distance to the north.
- The break in barrier line at the intersection appears to be misaligned with turn paths.
- Change in regulatory speed is located at the intersection. This should typically be located before or after an intersection.
- Lake Macdonald Drive at this location has minimal road edge guideposts and no RRPM's.
- The intersection has no lighting and poor night-time delineation.

With the Project installing a works zone with a reduced speed limit the risk of accidents and incidents will be reduced. However, the minor issues should be rectified by John Holland within the works zone as follows:

- Relocate the change in regulatory speed signage (60km/h to 80km/h) approximately 240m north of the intersection.
- Install RRPM's and adjust the break in barrier line.
- Install new or upgrade existing signage and linemarking to appropriate reflectivity levels.

4.4.2 Elm Street / Lake Macdonald Drive

- The crest on Cooroy Connection Road, north of the intersection obstructs sight distance. Safe intersection sight distance (SISD) is potentially not achieved for cars although may be acceptable for trucks with increased object height criteria.
- Larger vehicles when propped at the intersection will do so on the Lake Macdonald Drive approach which is at a grade (inferred at approx. 4%). There is a risk of heavy vehicles rolling backwards, or exiting the intersection at a slow speed.
- Larger vehicles when propped at the intersection via Lake Macdonald Drive will block the uncontrolled pedestrian crossing point. There is a risk of pedestrians crossing at the rear of the heavy vehicle and being struck by entering traffic whose visibility will be obscured.
- The lane width on Lake Macdonald Drive narrows on approach to the intersection which impacts the swept path for long vehicles turning in and out of the intersection.
- Minimal warning of the 200m trapped left turn lane is provided with only two arrows in the last 50m.
- The bicycle lane is highlighted within the left turn traffic lane with markings which are worn and need to be re-painted.

With this intersection requiring upgrade to allow for required heavy vehicle swept paths, all the above items should be considered as part of the planned upgrade. The last two items should be actioned by TMR prior to the intersection upgrades as these are simple and low cost.

4.4.3 Elm Street / Diamond Street

- The auxiliary left turn from Elm Street into Diamond Street obstructs sight distance for vehicles turning right onto Cooroy Connection Road.
- Right-in movement appears to be permitted into the train station car park from Cooroy Connection Road. There is a risk of rear-end crashes due to the lack of a protected turn lane.
- There are no dedicated on-road provisions for cyclists through this section.

- There is no provision for pedestrians crossing Diamond Street.

4.4.4 Cooroy - Noosa Road / Sivyers Road

- The position of the AUL obstructs sight distance to oncoming traffic for vehicles exiting Sivyers Road.
- Existing kerb is damaged, and a larger section has broken away.
- There is no signage identifying the bus stop.
- Road edge guideposts to the AUL are damaged and misaligned.
- Turn volumes potentially indicated flag lighting should be provided to the intersection.

4.5 Dilapidation Assessment

The Dilapidation report provided the following findings and conclusions:

- The existing pavement condition is poor at various locations along Lake Macdonald Drive (between Elm Street and Swift Road) and Elm Street (southern section of Lamonts Road to Yurol Forest Drive). Heavy vehicle trips generated by the development are expected to increase the rate of deterioration.
- Further investigation is recommended for:
  - NSC's planned pavement maintenance activities for Lake Macdonald Drive – Seqwater to action
  - NSC's planned pavement upgrades to Lake Macdonald Drive – Seqwater to action
  - A potential maintenance strategy for the road section to be adopted during the construction of the LMDIP – Seqwater to engage with NSC
  - Consideration of a monetary contribution in lieu of undertaking the above works given the required timing.
- Defects have been observed as part of the culvert component of the dilapidation surveys. The culverts appear to have degraded from the previous assessment conducted in 2020. Further structural assessment is recommended on culvert locations 2 (at Dianella Court / Wilgee Court) and 5 (outside #341/345 Lake Macdonald Drive).

4.6 Pavement Impact Assessment

4.6.1 Pavement Contributions

The PIA was undertaken and reported in December 2020 which estimated a contribution of less than $15,000. The assessment may be required/conditioned to be completed with the latest information (routes and heavy vehicle flow); however, the updated contribution may be able to be negotiated and the more expensive upgrade at Elm Street / Lake Macdonald Drive considered as works in-kind given the existing deficiency.

4.6.2 Dilapidation Survey

Numerous pavement defects have been identified on Lake Macdonald Drive in both the 2020 and the latest assessment . The Project does not intend to provide NSC with a contribution but will monitor these locations daily and repair any areas that pose risks to vehicles on the route. The pavement conditions will be assessed and managed as per TMRs Routine Maintenance Guidelines Ch 4 Routine Maintenance Intervention Level and Response Time (IL/RT) as detailed further in **Section 6**.Other Road Impacts

It is understood that Seqwater and John Holland have liaised with NSC regarding two items as follows and have a letter of no objection from NSC – refer to **Appendix F**.

4.6.3 Temporary Closure of Collwood Road

A temporary closure of Collwood Road to install fencing, enable clearing and allow an alternative (emergency access point to the construction site. As Collwood Road through the Noosa Water Treatment Plant has no private vehicle through movements allowed, this temporary closure of Collwood Road has limited impact and only reduces the use of several community recreational areas just to the east of the site.

4.6.4 Left-Hand Embankment on Lake Macdonald Drive

A portion of the existing dam structure (left-hand embankment) has been constructed within the Lake Macdonald Drive Road reserve. It is understood that this is a legacy issue as the dam was originally an asset of NSC and later transferred to Seqwater without an adjustment of property boundaries.

The left-hand embankment works are expected to require a lane closure on Lake Macdonald Drive (down to one-lane) during the demolition of the embankment during mid-2026, for approximately 1 month and re-construction during the second half of 2027, for approximately two months. This work activity will require a specific TGS developed with portable traffic signals and/or active traffic controllers and submitted to NSC at the appropriate time for approval. There may be miscellaneous closures for short periods for the concrete lined channel and the installation of landscaping. The lane closure would only be during approved work hours and both lanes would be opened outside of approved work hours with appropriate delineation and protection as per the AGTTM.

Lake Macdonald Drive has a peak hourly flow less than 150 vehicles (two-way) which allows a maximum length of up to 800m for a single lane (shuttle flow) arrangement based on AGTTM Table 5.4. The length for the works zone on Lake Macdonald Drive required is in the order of 350m.

5. Mitigation Measures

To manage the impacts of increased Project traffic, several mitigation measures have been identified in the TIA as follows:

- Development of Traffic Guidance Scheme/s (TGS's).
- Intersection upgrade at Elm Street / Lake Macdonald Drive.
- Reduced heavy vehicle movements during school peaks.

5.1 Traffic Guidance Scheme

The TGS is a critical component of managing traffic flow and safety during the construction period. It involves the arrangement of temporary traffic control devices to direct, guide, and inform road users through or around a worksite or temporary hazard, ensuring minimal disruption to traffic and enhanced safety for both workers and the public.

A concept TGS for Lake Macdonald Drive is included in **Appendix G-1** which will need to be developed further by John Holland and its Traffic Control subcontractor. Additional TGS's will be required for all proposed construction road switches and configurations such as the reduction of Lake Macdonald Drive to a one-way lane arrangement for the demolition and construction of the left embankment.

As part of the early works, a concept TGS for Elm Street / Lake Macdonald Drive prior to the intersection upgrade has been developed to stop and control vehicles on Lake Macdonald Drive. This is to allow heavy vehicles (required for semi-trailers only) on Elm Street to straddle the through and left turn lane to turn left safely crossing over the centreline on Lake Macdonald Drive until able to manoeuvre back fully in the departure lane. Refer to **Appendix G-2**.

Key control measures which will be outlined further in the TGS for approval by TMR and NSC shall include:

- *Compliance and Approvals*: All TGSs will be compliant with AS 1742.3 and the MUTCD Part 3 standards. These schemes will be submitted to the Client along with applications for Road Occupancy Licenses (M994) for shift-by-shift activities (short-term works).
- *Advance Warning Devices*: To notify road users of changes to traffic conditions ahead, signage and pavement markings will be installed at strategic points before the work zone. The advance warning area allows drivers sufficient time to adjust their speed and behaviour, contributing to safer transitions through the work area. This may include dynamics signage such as Variable Message Signs (VMS) for information on the Project and key information such as upcoming traffic changes.
- *Real-time traffic controllers*: To be deployed to manage traffic flows and minimise delays at key intersections, particularly during peak construction periods.
- *Traffic Control Devices*: These include portable traffic signals, safety barriers, and delineation devices to separate traffic from the work zone and create a safe working environment. The use of devices such as VMS helps convey real-time information about road conditions, diversions, and speed limits to road users. All equipment for TGSs will be installed in accordance with the Traffic Control Procedure and will be supported by relevant toolbox talks and traffic instructions.
- *Speed Control*: Temporary speed limits to be implemented along Lake Macdonald Drive (covering accesses/egresses at Collwood Road and Hardstand Area 3) to reduce traffic speed in and around the work zone. This helps to mitigate the risk of accidents and ensures both worker and road user safety. These speed limits are clearly marked and enforced through signage placed in the warning and work areas.
- *Pedestrian and Vulnerable User Safety*: The TGS includes provisions for safe crossings and alternative pathways for pedestrians, cyclists, and other vulnerable road users, ensuring that they can navigate around the construction area without undue risk. The key risk for the TSG is to consider and implement is a safe route for walks/hikers on the Noosa Biosphere Trail Network. This is proposed to be on the western verge with safe and appropriately located crossing locations.

- *Heavy Vehicle Management*: The scheme incorporates Vehicle Movement Plans (VMPs) that describe access routes, entry and exit procedures for the heavy vehicles involved in the project. These VMPs help prevent conflicts between construction traffic and general traffic, ensuring smoother transitions and minimising delays.
- *Training and Instructions*: John Holland's nominated Traffic Representative will ensure that frequent face-to-face instructional meetings are held with all traffic management team members, including subcontractors. These meetings will provide training on contemporary issues and reinforce formal procedures and systems already in place. Safe work methods and best safe practices will be discussed during these meetings, with Activity Management Statements (AMS) drafted to incorporate recent learnings.
- *Communication and Updates*: Day-to-day information will be exchanged during pre-start briefings at the commencement of every shift. Toolbox talks will be held weekly, led by the field supervisor or traffic foreperson, to discuss ongoing safety and traffic management issues. The nominated Traffic Representative or their delegate will attend these weekly toolbox talks to ensure consistent communication and adherence to safety protocols.
- *Continuous Monitoring and Adjustment*: The TGS is regularly reviewed and updated based on the evolving conditions at the site, traffic patterns, and feedback from road users. This ensures that the scheme remains effective throughout the construction phase, intending to maintain traffic flow, ensure safety, and minimising disruption.

5.2 Intersection Upgrades

5.2.1 Elm Street / Lake Macdonald Drive Intersection

An upgrade of Elm Street / Lake Macdonald Drive is required for safe manoeuvring of semi-trailers turning into and out of Lake Macdonald Drive so not to cross over the Lake Macdonald Drive centreline. This upgrade should also consider the issues raised as part of the RSA.

It is noted that Lake Macdonald Drive is a designated 25/26m B-double and PBS Level 2A route terminating at the disused Quarry (access 295m northeast of Swift Drive). This route continues on Elm Street south of Lake Macdonald Drive onto Myall Street to the Bruce Highway exit 230 interchange. As such, any additional provisions to allow for safe manoeuvring for 25/26m B-double and PBS Level 2A should be the responsibility of the State or Local Government.

5.2.2 Elm Street / Diamond Street Intersection

TMR responsibility or a contribution to be negotiated for an upgrade. SIDRA analysis for the without project scenario showing the intersection is above acceptable limits. Further, the movement which is over capacity is the right turn from Diamond Street which the Project only adds an average of 3.3 rigid heavy vehicles to the base 2028 flow of just over 100 vehicles.

5.3 School Communities Impacts

Seqwater and John Holland have liaised with Cooroy State School and Milestone Early Learning Centre. The key issues were potential noise, dust and traffic impacts. Heavy vehicle movements past the school during peak morning and afternoon drop-off was discussed, however, there was no request from the school to restrict movements during these times. Ongoing engagement and monitoring will be required. Meeting minutes / notes are provided in **Appendix H-1** and **Appendix H-2** for Cooroy State School and Milestone Early Learning Centre respectively.

Further, SMEC during the development of the TMP, has also liaised with NSC on and TMR with meeting minutes are include in **Appendix H-3** and **Appendix H-4**.

As outlined in **Section 3.4.1.3.1**, heavy vehicle movements will be minimised to a maximum of six two-way movements in school term during school peak traffic time (7:20 am to 8:45 am and 2:30 pm to 3:45 pm).

The other issues of potential noise and dust impacts will be mitigated and controlled by heavy vehicles limiting the use of engine breaks and all quarry material, soils, etc. to be covered which is current industry best practice.

No reduce noise signage was observed on any of the State Controlled Roads heading into Cooroy township. At a minimum, a reduce noise sign should be installed for the northern heavy vehicle route on Elm Street prior to the residential area and suggested just prior to Lamonts Road.

6. Road Conditions and Maintenance

6.1 Pavement Impacts

6.1.1 Mitigation Measures:

- Initial Resurfacing and Patching: To prevent accelerated deterioration, sections of Lake Macdonald Drive required immediate resurfacing and. This has been undertaken previously and will prevent costly failures during peak construction.
- Routine Inspections and Maintenance: A dedicated maintenance strategy should be established to monitor and address any new pavement failures during construction. This could involve weekly inspections and more detailed visual inspections every 3-6 months to catch early signs of damage.

6.2 Pre-Condition Investigations

The primary objectives of conducting pre-condition investigations are:

- To document the existing condition of all key roads, including Lake Macdonald Drive, and other local roads that will be impacted by construction traffic.
- To identify sections of the road network that are in poor condition or are likely to deteriorate quickly under the stress of heavy vehicle movements.
- To provide a basis for determining responsibility for repairs or upgrades required due to construction activities.
- To develop a maintenance plan that ensures roads are kept in a safe and functional condition throughout the construction period.

6.2.1 Methodology of Pre-Condition Investigations

6.2.1.1 Visual Inspections

A team of qualified road engineers will conduct comprehensive visual inspections of all roads likely to be significantly impacted by the project. The inspections will focus on identifying existing road surface defects, such as cracking, potholes, rutting, and surface wear.

Key intersections, such as Lake Macdonald Drive at Elm Street, will be inspected to assess pavement integrity and the ability of the intersections to handle increased heavy vehicle traffic.

6.2.1.2 Photographic and Video Documentation

High-resolution photographs and video footage will be taken along all key routes, with specific attention paid to areas of concern, such as cracked pavements, narrow sections, and intersections with high traffic volumes.

This documentation will serve as a reference point for assessing any damage caused by construction activities and determining the scope of repairs required during or after the project.

6.2.1.3 Existing Standard

While the LMDIP project recognises the need for roads to meet the good standards for safety reasons, the standard of existing roads will be assessed against the TMRs Routine Maintenance Guidelines Chapter 4: Routine Maintenance Intervention Level and Response Time (IL/RT) for the current standard of defects. The assessment of the existing condition will from a basis for negotiations about responsibility for maintenance and rehabilitation costs between the project and road owners.

6.2.2 Reporting and Documentation

6.2.2.1 Pre-Condition Reports

Detailed pre-condition reports will be prepared for each road segment and intersection inspected. These reports will include:

- A summary of the existing road condition, including any defects or areas of concern.
- Recommendations for immediate repairs or upgrades to prevent further deterioration during construction.
  - Photographic and video documentation showing the road conditions prior to the start of construction.

6.2.2.2 Sharing with Stakeholders

The results of the pre-condition investigations will be shared with key stakeholders, including NSC, Seqwater, and local community representatives. This ensures transparency and allows for collaboration in determining the scope of any required road improvements.

6.2.3 Baseline Data for Post-Construction Assessments

The pre-condition investigations will also serve as the baseline for post-construction assessments. Once construction is complete, the same roads will be re-inspected to determine the extent of any damage caused by construction traffic. This will help establish whether the Contractor is responsible for repairing any damage or whether further maintenance by local authorities is needed.

6.3 Road Maintenance

The Project will generate increased stress on the local road network due to the frequent use of heavy vehicles and construction-related traffic. Maintaining road conditions throughout the project is crucial to ensuring safe travel for both construction vehicles and the general public, as well as preserving the integrity of the road infrastructure. A well-structured road maintenance program will be implemented to address wear and tear, prevent road failures, and ensure that disruptions to the community are minimised.

The road condition and required maintenance intervention on State Controlled Roads will be assessed and managed in accordance with TMRs Routine Maintenance Guidelines Chapter 4: Routine Maintenance Intervention Level and Response Time (IL/RT). If similar maintenance guidelines are available from NSC these will be utilised on the local government roads otherwise TMR processes will be used.

Roads to be inspected and maintained include Lake Macdonald Drive (to Collwood Road) which is a Category C Road, Elm Street / Cooroy Connection Road (from Bruce Hwy exit 237 to Lake Macdonald Drive) which is a category C road and Collwood Drive which is a category D road. The default corporate weighting to be used in intervention assessments is 3.

6.3.1 Objectives of the Road Maintenance Program

The primary goals of the road maintenance program for this project are:

- To preserve road quality and prevent significant deterioration due to the heavy vehicle traffic associated with construction.
- To ensure the safety of all road users, including construction workers, local residents, and general traffic.
- To minimise disruptions and delays caused by road closures or repairs by implementing proactive maintenance strategies.
- To restore the roads to pre-construction conditions once the project is complete.

6.3.2 Regular Inspections and Monitoring

6.3.2.1 Scheduled Road Inspections

To ensure that roads remain in good condition throughout the project, scheduled inspections will be carried out regularly. These inspections will focus on identifying early signs of road surface deterioration, such as cracking, rutting, and pothole formation, which are typically caused by frequent heavy vehicle traffic:

- Daily visual inspections by a suitable experienced person within John Holland to identify any immediate road hazards or surface damage that may require action.
- Detailed inspections will be conducted by suitable experienced person within John Holland's team or a subcontractor when issues are identified by the daily visual inspections to assess the overall condition of the pavement, shoulders, and drainage systems. These detailed inspections will help determine if more significant maintenance efforts are required.

6.3.3 Maintenance of Gravel Roads

Given the rural nature of the project area, Collwood Road has a gravel surface that is more prone to degradation due to vehicle traffic – Project light vehicles only. The following maintenance measures will be implemented for gravel roads such as Collwood Road if they are utilised:

- **Regular Grading**: Gravel roads will undergo periodic grading to smooth out ruts, potholes, and uneven surfaces. This will help ensure that the road remains safe and passable for both light and heavy vehicles.
- **Dust Suppression**: Frequent vehicle movements on gravel roads can lead to increased dust generation. To minimise dust and reduce visibility hazards, water spraying, or dust control agents will be used as part of the routine maintenance strategy.
- **Gravel Replenishment**: In areas where gravel surfaces become thin or depleted due to vehicle use or weather conditions, new gravel material will be applied to maintain road stability and surface quality.

6.3.4 Pothole Repairs and Surface Patching

6.3.4.1 Pothole Repair Process

Potholes will be a common issue on both paved and gravel roads due to the stress placed on the road network by construction traffic. Pothole repairs will be prioritized to prevent further damage and ensure road safety.

Cold mix asphalt patches will be used for quick repairs on paved roads to address potholes and minor cracks.

For more significant potholes, a hot mix asphalt patch will be applied, along with appropriate surface compaction, to ensure that the repair is durable and can withstand heavy vehicle loads.

6.3.4.2 Surface Patching and Resurfacing

Where sections of the road show signs of significant surface wear, patching and resurfacing will be conducted to restore the integrity of the pavement. This will involve:

- Surface milling to remove the top layer of the damaged pavement, followed by the application of a new asphalt surface.
- For gravel roads, surface patching will involve replenishing the gravel material and compacting the surface to ensure a smooth driving experience.

6.3.5 Shoulder Maintenance and Erosion Control

6.3.5.1 Reinforcement of Shoulders

The shoulders of roads like Lake Macdonald will experience increased pressure as construction vehicles frequently travel close to the edges of the road.

The maintenance program will include:

- Reinforcing shoulders (where needed) with additional gravel or asphalt to prevent erosion and reduce the likelihood of road edges collapsing under heavy loads.
- Regular shoulder inspections to identify any signs of instability or wear and prompt early intervention before the damage spreads.

6.3.5.2 Erosion Prevention

To prevent road erosion, especially during periods of heavy rain, erosion control measures will be implemented. This will include:

- Drainage improvements to ensure that water flows away from the road surface and into proper drainage systems, reducing the risk of water pooling and weakening the road base.
- Vegetation planting along the shoulders and embankments to stabilise the soil and prevent erosion.

6.3.6 Drainage System Maintenance

Proper drainage is critical to maintaining road quality, as poor drainage can lead to pavement deterioration and road failures. The road maintenance program will include:

- Cleaning and clearing drainage ditches, culverts, and stormwater drains to ensure they are functioning properly and can handle increased runoff during construction.
- Installing new culverts or improving existing ones along roads where water accumulation has been identified as a potential issue. This will prevent water from pooling on the road surface and reduce the risk of pavement damage.

6.3.7 Temporary Road Closures for Maintenance

To carry out certain maintenance tasks, such as major resurfacing or drainage system improvements, temporary road closures may be required. These closures will be managed carefully to minimise disruption:

- Advance notifications will be given to local residents, businesses, and schools, with clear signage indicating the dates and times of the closures.
- Detour routes will be clearly marked to ensure that traffic can continue to flow smoothly, even during maintenance periods.
- Short-term closures will be scheduled during off-peak hours to reduce the impact on traffic.

6.3.8 Post-Construction Road Restoration

Once the construction phase of the project is complete, all roads that were impacted by construction activities will undergo a final round of post-construction restoration. This will involve:

- Resurfacing of roads that experienced significant wear, particularly sections on Lake Macdonald.
- Reconstruction of damaged road sections to restore them to their original condition or better, ensuring long-term serviceability for the local community.
- Inspection and restoration of drainage systems and culverts to ensure they are fully functional and capable of handling post-construction runoff.

6.4 Post-Construction

Upon the completion of the Project, all roads used for construction traffic will require post-construction restoration to ensure that they are returned to a safe and serviceable condition for the local community. The heavy vehicle traffic, coupled with the prolonged use of key access routes such as Lake Macdonald will likely have caused wear and tear on these roads, necessitating a comprehensive restoration process.

The objectives of the post-construction phase are to repair any damage caused by construction activities, ensure that road surfaces meet local council standards, and restore the roads to their pre-construction

condition or better. This section outlines the key actions involved in post-construction road restoration, including assessments, repairs, and long-term maintenance strategies.

6.4.1 Post-Construction Road Condition Assessments

6.4.1.1 Road Surface Inspections

A detailed inspection of all roads affected by the project will be conducted once construction activities have ceased. These inspections will identify pavement damage, such as cracking, rutting, potholes, and surface wear caused by heavy vehicle movements.

Special attention will be given to sections of Lake Macdonald Drive, and Elm Street, where significant vehicle volumes have passed, and intersections that may have experienced surface stress due to frequent turning movements of large construction vehicles.

6.4.1.2 Structural Assessments

In addition to surface inspections, structural integrity assessments of the pavement will be carried out to determine if any deeper structural damage has occurred during the project. This will involve testing the subgrade and pavement layers to ensure that they remain capable of supporting regular traffic loads in the future.

6.4.1.3 Post Construction Condition

As mentioned in **Section 6.2.1.3** in the standard of existing roads will be assessed against the TMRs Routine Maintenance Guidelines Chapter 4: Routine Maintenance Intervention Level and Response Time (IL/RT) for the current standard of defects. The assessment of the previous condition versus the post construction will from a basis for negotiations about responsibility for maintenance and rehabilitation costs between the project and road owners. The amount of maintenance works required to be undertaken to bring the road from its pre-existing condition to a safe standard matching the TMR intervention levels should also be considered as part of the negotiations.

6.4.2 Road Repairs and Resurfacing

6.4.2.1 Pavement Resurfacing

Where the road surface has sustained significant damage, resurfacing will be carried out. This process will involve the removal of the top layer of damaged asphalt, followed by the application of a new layer or applying a new spray seal. Resurfacing will restore the smoothness and safety of the road for both light and heavy vehicles.

Hot mix asphalt or other durable materials will be used for resurfacing, particularly in high-traffic areas, to ensure the longevity of the repaired sections. Roads that had been subject to temporary patching during construction will receive more permanent repairs.

6.4.2.2 Gravel Road Restoration

On gravel roads, if utilised, the roads will be restored by adding new gravel layers and compacting the surface to maintain evenness and stability. This process will ensure that the road can continue to safely accommodate local traffic in the future.

Dust suppression measures will be implemented to stabilise the surface and prevent excessive dust from gravel roads post-construction.

6.4.3 Shoulder and Intersection Repairs

6.4.3.1 Shoulder Reinforcement

The shoulders of key roads, particularly Lake Macdonald Drive, may have experienced damage due to vehicles pulling off or construction equipment operating near the road edges. These shoulders will be reinforced using gravel or asphalt to prevent further erosion and ensure road safety.

Shoulders will be regraded and compacted to ensure they are flush with the road surface, minimising the risk of vehicles dropping off the road edge or causing instability.

6.4.3.2 Intersection Upgrades

Intersections such as Lake Macdonald Drive at Elm Street may have experienced increased wear due to frequent turning movements by large construction vehicles. These intersections will be inspected for any structural issues, and necessary upgrades or resurfacing will be performed to restore their functionality.

Pavement markings, signage, and traffic control devices at these intersections will also be checked and re-installed as needed to ensure proper traffic flow and safety.

6.4.4 Final Road Safety Audits

6.4.4.1 Post-Construction Safety Audits

Once all road repairs and upgrades have been completed, a final safety audit will be conducted to ensure that all roads are safe for public use. This audit will focus on the structural integrity of the road, the condition of intersections, and the effectiveness of signage and traffic control measures.

Any issues identified during the audit will be addressed before the roads are reopened for normal traffic operations.

6.4.5 Handover to Local Authorities

6.4.5.1 Road Handover Process

Once the post-construction road restoration work is complete, the roads will be handed back to the NSC or other relevant local authorities. This will involve a formal handover process, including the submission of final inspection reports, as-built drawings, and any maintenance recommendations for the future.

6.4.5.2 Maintenance Agreements

In some cases, maintenance agreements may be established to outline the responsibilities of the construction contractor (i.e. John Holland for this Project) for ongoing road repairs or maintenance for a specified period following the completion of the project. This ensures that any latent defects or road failures resulting from the construction activities are addressed by the contractor. As mentioned above TMRs Routine Maintenance Guidelines will form the basis for these agreements.

The post-construction road restoration phase is a crucial step in ensuring that all roads impacted by the Project are returned to a safe and serviceable condition. Through comprehensive inspections, targeted repairs, and safety audits, the roads will be restored to meet local standards and ensure long-term usability for the community. Proper coordination with local authorities and ongoing communication with the public will ensure that road conditions are managed for all road users post-construction.

7. Control Measures

7.1 Traffic Management Implementation Plans

John Holland will develop and implement Site Construction Traffic Management Plan (STMP), tailored to the unique traffic management needs of the construction sites. This STMP will detail all traffic control requirements and modifications necessary for safe and efficient operations at the site. Key elements of these plans include the design and positioning of traffic safety barriers, pavement markings, updated signage, amended traffic signal plans, public notifications, and road user guidance systems. Specifically, the STMPs will incorporate the following:

- Traffic Management Design: This will outline the detailed traffic control measures, including signage, lane markings, safety barrier systems, and VMS, required for each traffic stage. The staging drawings will illustrate the layout and implementation for each phase of traffic management throughout the project.
- Vehicle Movement Plans (VMPs): These plans will specify the entry and exit protocols for each construction site compound or long-term work site. They will also map the designated access routes to and from the work areas, using visual aids such as Google-style maps. The VMPs will include specific instructions for access, such as left-in, left-out manoeuvres, the use of radio communication systems, and synchronisation with nearby traffic signals. Additional VMPs may also be developed to guide vehicle movements for short-term lane closures, where necessary.

The STMP for this project will strictly adhere to the relevant traffic management standards, including but not limited to Manual of Uniform Traffic Control Devices, Part 3: Traffic control for works on roads (AS 1742.3), QGTTM, and the MUTCD. Each plan will provide detailed descriptions of the construction works, along with their potential impact on local infrastructure, the environment, and the surrounding community. Further guidance will follow Seqwater's specification TS1300 Part 7.08.

Additional aspects covered in the STMPs will include:

- NWTP operational area
- Noosa Walking Trail considerations
- Internal haul roads management
- Traffic risks and control measures
- Existing infrastructure and road users
- Heavy vehicle separation strategies
- Environmental impact mitigation measures
- A comprehensive VMP.

The STMP will undergo a rigorous review and approval process by the Construction Manager before being circulated for implementation. The plans will be regularly reviewed and updated to align with evolving project needs, ensuring continued safety and efficiency. Figure 4 provides a visual representation of the structure of these plans.

7.2 Roles and Responsibilities

Effective traffic management during the Project requires clear delineation of roles and responsibilities across all levels of project management and implementation. This section outlines the key roles and their associated responsibilities, aligned with the Austroads Guidelines on TMPs and other relevant documents.

These roles are crucial for ensuring the safety of road users, construction workers, and the general public, as well as maintaining the integrity of the road network throughout the project.

John Holland’s STMP will address the below and provide names and contact details.

7.2.1 Project Manager

7.2.1.1 Primary Responsibilities

- Reporting Line: Reports to Executive Management and coordinates with the Traffic Manager and John Holland's Team Leaders.
- Ensure overall compliance with the project's TMP and Standards for traffic management.
- Oversee the execution of all traffic management control measures during the project.
- Approve the assignment of key roles, including the Traffic Manager and Traffic Controllers, ensuring that all personnel are appropriately qualified and trained in traffic management.
- Monitor and review the TMP periodically to address any changes in project scope or traffic conditions, ensuring continuous alignment with Austroads Guidelines and safety protocols.

7.2.2 Senior Project Engineer

7.2.2.1 Primary Responsibilities

- Reporting Line: Reports to the Project Manager and works closely with the Traffic Manager and Construction Supervisor.
- Develop, review, and amend the TMP in line with Standards and local road authority requirements.
- Conduct traffic impact assessments and ensure that the TMP adequately addresses potential risks and mitigates traffic disruption.
- Provide technical advice on traffic control measures, including the placement of temporary traffic signals, speed limits, detours, and signage.
- Work with the Traffic Manager to ensure all traffic management strategies are implemented effectively on-site and address any traffic flow issues.
- Assist in post-construction assessments to evaluate the effectiveness of traffic management measures and recommend improvements for future projects.
- Qualifications: TMD accreditation required for any signoff of any and all TMP updates.

7.2.3 Construction Supervisor / Superintendent

7.2.3.1 Primary Responsibilities

- Reporting Line: Reports to the Project Manager and liaises with the Traffic Manager.
- Oversee daily construction activities while ensuring all traffic management measures are adhered to, particularly around site entrances and areas where construction vehicles are entering or exiting the road network.
- Coordinate with the Traffic Manager and Traffic Controllers to ensure that the TMP is followed, particularly during high-impact activities like heavy vehicle deliveries and road closures.
- Ensure that construction workers and subcontractors understand and comply with the traffic management protocols, including vehicle entry/exit procedures and pedestrian safety measures.

7.2.4 Traffic Manager / Traffic Management Contractor

7.2.4.1 Primary Responsibilities

- Reporting Line: Reports directly to the Project Manager and regularly liaises with Traffic Controllers, Construction Supervisors, and local authorities.

- Develop, approve and oversee the implementation of the TMP and TGS and ensure all control measures and traffic management practices comply with the relevant standards, including the Austroads Guidelines.
- Coordinate with local authorities, emergency services, and stakeholders to ensure smooth traffic operations throughout the construction phase.
- Ensure that all TMP and TGS procedures are followed by the project team and subcontractors and that adequate resources (personnel and equipment) are allocated to manage traffic-related risks effectively.
- Approve any changes to the TMP and TGS and ensure all modifications are communicated to relevant parties.
- Liaise with NSC, Seqwater, and other key stakeholders to keep them informed of project progress and any upcoming traffic changes or disruptions.
- Qualifications: TMD accreditation required for any signoff of any and all TMP updates, and TGS's.

7.2.5 Traffic Controllers

7.2.5.1 Primary Responsibilities

- Reporting Line: Reports to the Traffic Manager.
- Implement on-site traffic control measures as outlined in the TMP and aligned with Austroads standards.
- Operate traffic control devices, such as stop-go signs, temporary traffic signals, and VMS, to manage traffic flow around the construction site.
- Ensure that all road users, including pedestrians, cyclists, and vehicles, are safely guided through or around the worksite.
- Monitor real-time traffic conditions and report any issues, such as congestion or hazards, to the Traffic Manager for immediate resolution.
- Assist in ensuring that construction vehicle movements comply with the TMP and are coordinated with road users to minimise disruption.
- Qualifications:
  - Must hold current TMR accreditation as a Traffic Controller.
  - Traffic Management Implementation (formerly referred to as Level 2 Traffic Management) if implementing traffic management plans and installing/removing signs and devices.
- Training: undergo site-specific training for the LMDIP.

7.2.6 Community Liaison Officer

7.2.6.1 Primary Responsibilities

- Reporting Line: Reports to the Project Manager and coordinates with the Traffic Manager.
- Act as the primary point of contact between the project team and the local community to address concerns about traffic impacts and provide updates on construction schedules, road closures, and detours.
- Ensure that all traffic management information is communicated to the public in a clear and timely manner, using tools such as public notifications, social media updates, and community meetings.
- Collect feedback from the community on traffic management issues and relay this information to the Traffic Manager for further action.

7.2.7 Contractors and Subcontractors

7.2.7.1 Primary Responsibilities

- Reporting Line: Reports to the Construction Supervisor and Project Manager.

- Ensure that all construction activities are carried out in compliance with the TMP and Austroads Guidelines.
- Provide regular updates to the Traffic Manager on planned construction activities that may impact road usage or require additional traffic management measures.
- Ensure that all construction workers are briefed on traffic control procedures and that heavy vehicle movements are coordinated with the Traffic Controllers.

7.2.8 Local Authorities

7.2.8.1 Primary Responsibilities

- Reporting Line: Local authorities coordinate with the Traffic Manager and Project Manager.
- Ensure that the traffic management plan complies with local council requirements and that any permits or approvals for road closures, detours, or other changes to road use are obtained in a timely manner.
- Coordinate with the project team to manage community feedback and address any public concerns about traffic impacts during the construction period.
- Monitor compliance with traffic management regulations and provide oversight on school zone traffic management, particularly during peak periods near sensitive areas.

7.2.9 Emergency Services

7.2.9.1 Primary Responsibilities

- Reporting Line: Liaise with the Traffic Manager.
- Provide input on the TMP to ensure that emergency vehicle access is maintained at all times during the construction phase.
- Coordinate with the Traffic Manager to respond to any incidents or emergencies that occur on-site or in the surrounding road network.
- Ensure that all fire, ambulance, and police services are kept informed of road closures, detours, or any other traffic management actions that could impact emergency response times.

7.3 Operating and Working Hours

7.3.1 Standard Operating and Working Hours

7.3.1.1 Construction Work Hours

Refer to **Section 3.3**.

7.3.1.2 Heavy Vehicle Movements and Reduced Impacts

Refer to **Section 5.3**.

7.3.2 Extended Hours for Critical Construction Activities

7.3.2.1 Permitted Extensions

In certain situations, extended operating hours may be necessary for critical activities, such as OSOM vehicle deliveries, concrete pours, or activities that cannot be interrupted. For these exceptions:

- Prior approval will be sought from NSC and other relevant authorities.
- Extended working hours will be communicated to the local community and stakeholders well in advance, with a minimum notice period of 5 days for major disruptions.

7.3.2.2 Night Works

Night works will only be permitted under exceptional circumstances, such as critical road upgrades, OSOM vehicle movements, or emergency works where daytime construction would lead to unacceptable traffic disruptions or safety risks.

For any night works:

- Noise mitigation measures will be implemented, including the use of sound barriers and limiting noisy activities.
- Lighting plans will ensure that adequate safety lighting is provided without creating excessive glare or light pollution for nearby residences.
- Local residents will be notified at least one week in advance of any night work schedules, with clear communication of the purpose, duration, and expected impacts.

7.3.3 Managing Community Impacts

7.3.3.1 Noise and Vibration Controls

Construction activities will be managed to minimise noise and vibration impacts on the local community, especially during early morning and late evening hours. Control measures include:

- Restricting the use of noisy machinery, such as jackhammers, pile drivers, and excavators, to the core operating hours of 6:30 am to 6:30 pm.
- Using sound-dampening equipment and techniques, such as mufflers and acoustic barriers, to reduce noise levels during approved extended hours.
- Monitoring vibration levels during heavy vehicle movements, particularly near sensitive areas such as residential zones and heritage sites.

7.3.3.2 School Zones and Sensitive Areas

Vehicle movements and construction activities near Cooroy State School and other sensitive areas, such as Milestones Early Learning Centre, will be carefully coordinated to avoid disruption during school drop-off and pick-up times (7:20 am to 8:45 am and 2:30 pm to 3:45 pm). This will ensure the safety of students and minimise noise during key times.

Construction workers and vehicle operators will be instructed to be mindful of school zones and adhere strictly to speed limits and quiet hours in these areas.

7.3.4 Coordination with Contractors and Subcontractors

7.3.4.1 Work Hours

John Holland and all subcontractors must adhere to the designated working hours set for the project. Any deviation from these hours must be approved by the Traffic Manager and coordinated with local authorities and community stakeholders.

7.3.4.2 Enforcement of Operating Hours

Regular audits and monitoring will be conducted to ensure that all John Holland staff and subcontractors comply with the approved operating hours. Any breaches of these hours will result in penalties or suspension of work until compliance is restored.

John Holland and subcontractors must schedule their heavy vehicle deliveries and other traffic-generating activities in line with the approved timeframes to ensure minimal disruption to local traffic and compliance with road safety protocols.

7.3.5 Communication with the Community and Stakeholders

7.3.5.1 Public Notifications

The project team will provide regular updates to the local community, businesses, and stakeholders regarding construction schedules, including any changes to operating hours, road closures, or detours.

VMS, local bulletins, and social media platforms will be used to communicate any extended hours or night work schedules, ensuring that residents are kept informed and can plan accordingly.

7.3.5.2 Community Feedback Mechanisms

A dedicated community liaison officer will be appointed to manage inquiries, complaints, or concerns related to construction hours. This officer will be responsible for:

- Receiving and addressing feedback from residents regarding noise, traffic disruptions, and other impacts related to the working hours.
- Escalating issues to the Traffic Manager or Project Manager when necessary to adjust work schedules or implement additional mitigation measures.

7.3.6 Traffic Management During Operating Hours

7.3.6.1 Vehicle Movements

All vehicle movements, particularly for heavy vehicles, must be coordinated to occur within the designated operating hours. Deliveries and material transport outside of these hours will only be allowed with prior approval and coordination with the Traffic Manager and local authorities.

To avoid conflicts with local traffic and minimise community impact, heavy vehicles will be scheduled to avoid peak traffic times and operate primarily during the mid-morning to early afternoon window.

7.3.6.2 Road Closures and Traffic Control

Temporary road closures, detours, and lane reductions required for construction activities will be scheduled to occur within standard working hours to reduce disruption to local traffic.

Traffic controllers will be deployed during peak construction hours to manage vehicle movements safely and ensure smooth traffic flow near construction zones, particularly on Lake Macdonald Drive, and other identified affected areas.

7.4 Vehicle Access

Several key controls measures are as follows and additional details in the below sub-sections:

- To ensure safe sharing of the primary haulage road, regular contact is maintained between John Holland and the quarry suppliers and the local school buses that travel in the area. Measures include equipping buses with UHF radios for communication with trucks and displaying a large sign with designated bus times.
- Prior to coming to the site, all drivers undergo an extensive induction, are encouraged to communicate over UHF channel 40 as primary communication method. Drivers will also sign an agreement acknowledging their awareness to avoid buses and school zones during specific times as well as instructed to approach with caution and reduce speed as much as practicable.
- A comprehensive sign-in and sign-out system, along with a QR code registration, ensures truck movements are tracked, and drivers are aware of the Quarry and TMP.
- Quarries will have an intermittent boom gate or control points installed, opening, and shutting every five minutes when a truck passes through, preventing truck convoys from forming.

- Truck departures from site will also be controlled on site by the Site superintendent/supervisor to prevent truck convoys from forming when leaving.
- Complaints will be recorded, investigated, and resolved as per John Holland management plan.

7.4.1 Marshalling area

Should a marshalling area be required, an existing gravelled/word shouldered area shows signs of use by heavy vehicles immediately west of Kennedys Road (~200m) on Elm Street which is the main heavy vehicle route. This area is outside the residential area and 1.8km (or approximately 2mins travel time) before the school zone which

In liaison with TMR, if this area is to be used than it would need to be sealed so not to damage the shoulder/verge and a road corridor permit.

Another marshalling area may be possible on the Bruce Highway just north of Exit 237 interchange, however, this would only be able to be used by heavy vehicles from Gympie and material from Corbets Quarry.

The eastern heavy vehicle route (Cooroy - Noosa Road) as outlined above has very low flows. There are limited opportunities prior to the Cooroy township. The only possibility is the short sealed section east of Swift Drive.

7.4.2 Designated Vehicle Access Routes

7.4.2.1 Heavy Vehicle Access

Heavy vehicles, including OSOM vehicles, will use designated routes to access the project site, primarily via Lake Macdonald Drive, and Bruce Highway. These routes have been selected to minimise disruptions to residential areas, school zones, and other sensitive locations.

Identified road improvements, including widening and shoulder reinforcement, will be undertaken on this route to accommodate these vehicles safely.

Vehicles carrying large or hazardous materials will require escorts and must follow strict scheduling to avoid peak traffic hours. These movements will be coordinated with the Traffic Manager and communicated to the local community and authorities in advance.

7.4.2.2 Light Vehicle Access

Construction workers and other light vehicles will access the site via designated routes that avoid congested areas and minimise conflicts with heavy vehicles. Lake Macdonald Drive will serve as the primary route for light vehicle access to the project site.

To reduce the volume of light vehicles on local roads, carpooling and worker shuttle services will be encouraged. Parking areas will be set up near the site to avoid congestion on public roads.

7.4.2.3 Emergency Vehicle Access

Access for emergency vehicles will be maintained at all times. Dedicated access lanes and clear zones will be established along construction routes to ensure that emergency services can reach the project site and surrounding areas without delays. Regular coordination with local emergency services will ensure they are aware of any road closures or diversions.

7.4.3 Vehicle Access Control Points

7.4.3.1 Site Entrances and Exits

Clearly marked entrance and exit points will be established at key locations along Lake Macdonald Drive. These access points will be designed to accommodate both heavy and light vehicles and will feature proper signage and traffic control measures.

Access points will be manned by Traffic Controllers during peak construction hours to ensure the safe entry and exit of vehicles. This will include the use of stop-go signs and temporary traffic signals as necessary.

Vehicle queuing areas will be established near access points to prevent congestion on public roads. These areas will allow vehicles to wait off-road before entering the site, reducing the impact on surrounding traffic.

7.4.4 Vehicle Access Scheduling and Management

7.4.4.1 Staggered Scheduling

To reduce traffic congestion and ensure efficient vehicle movements, a staggered scheduling system will be implemented for both heavy and light vehicles. This system will be designed to:

- Limit the number of vehicles accessing the site during peak traffic hours (e.g., morning and afternoon school times).
- Coordinate heavy vehicle deliveries during periods of low local traffic to minimise disruption, particularly on roads like Lake Macdonald Drive.
- Ensure that OSOM vehicles are scheduled for transport during off-peak hours to avoid conflicts with other road users and reduce the need for temporary road closures.

7.4.4.2 Coordination with Local Authorities

The Traffic Manager will coordinate closely with NSC and other local authorities to ensure that vehicle access aligns with local traffic regulations and minimises disruption to the community.

Regular meetings with council representatives and local stakeholders will be held to review vehicle access plans and adjust schedules as needed to address traffic flow concerns or community feedback.

7.4.5 Environmental and Safety Considerations

7.4.5.1 Environmental Impact Mitigation

Several of the access routes, pass through areas with significant native vegetation. Care will be taken to minimise the environmental impact of vehicle movements by limiting the width of access routes and avoiding unnecessary clearing of vegetation.

Dust suppression measures will be implemented on gravel sections reduce dust emissions caused by vehicle movements. Water trucks will be used to dampen road surfaces during dry conditions to prevent excessive dust affecting nearby residences and wildlife.

7.4.5.2 Safety Measures

Speed limits will be enforced on all access routes, particularly near construction site entrances and in residential areas. Speed limits will be clearly posted and monitored to ensure compliance by both construction vehicles and local traffic.

Traffic controllers will be stationed at key access points during high-traffic periods to manage the safe entry and exit of vehicles. Additional flaggers may be used during OSOM vehicle movements to ensure safe passage on narrow sections of road.

7.4.6 Communication with Stakeholders and the Community

7.4.6.1 Public Notifications and Updates

The project team will maintain open communication with the local community and stakeholders, providing regular updates on vehicle access plans, road closures, and any anticipated disruptions to traffic.

Community notices, social media updates, and local bulletins will be used to inform residents of upcoming road closures, changes to access routes, or other vehicle-related impacts.

7.4.6.2 Feedback Mechanisms

A feedback loop will be established to allow local residents and businesses to voice concerns about vehicle access or traffic impacts. The project team will review and address these concerns, making adjustments to vehicle schedules or access routes where possible.

7.5 Oversize/Overmass Vehicles

7.5.1 Pre-Planning and Approvals for OSOM Movements

During the Project, a maximum of 100 OSOM vehicle movements may be required. For any OSOM vehicles, special access measures will be put in place to manage their entry and exit from the site. Widened entrances, turning lanes, and temporary road closures will be used where necessary to allow safe access for these larger vehicles.

OSOM vehicle access will be scheduled for off-peak hours and coordinated with local authorities to minimise disruption to other road users.

7.5.2 Permits and Regulatory Approvals

The necessary permits and approvals, as and when required with appropriate lead time, will be submitted to the relevant authorities, including TMR, NSC, and other local agencies.

The following permits must be secured:

- OSOM Transport Permit: This will outline the specific routes, timing, and operational conditions under which OSOM vehicles are allowed to travel.
- Approval for road modifications (if required) such as temporary removal of obstacles, road widening, or use of escorts.

7.5.3 Route Planning and Coordination

The transport routes for OSOM vehicles will be carefully planned to minimise their impact on local infrastructure, sensitive areas, and residential zones. The planning process will consider:

- Avoidance of narrow residential streets, and school zones during peak hours (e.g., Cooroy State School), to minimise traffic disruptions and enhance safety.
- Bridge load limits, clearances under overhead structures, and road surface strength along the planned route will be reviewed to ensure that they can accommodate OSOM vehicles without damage or safety risks.

7.5.4 Timing of Movements

OSOM vehicles will be scheduled for transport during off-peak hours to minimise disruption to local traffic and improve road safety. Preferred operating times include:

- Night time or early morning movements (where permitted) to avoid conflicts with daily commuters, school zones, and residential traffic.
- Coordination of OSOM movements to avoid peak traffic times, such as morning and afternoon school hours or rush hour periods.

7.5.5 Escort and Traffic Control Requirements

7.5.5.1 Escort Vehicles

Pilot, escort vehicles and police vehicles will accompany OSOM transport as per the TMR Safe Movement Guidelines at the time of the movement.

7.5.5.2 Temporary Traffic Control

Additional traffic controllers will be stationed at key intersections and road crossings if necessary to manage traffic flow during OSOM vehicle movements. Noting that Police and Level 2 escort vehicle drivers duties include controlling traffic.

7.5.6 Road and Infrastructure Protection

7.5.6.1 Bridge and Pavement Load Management

OSOM vehicles will be restricted to routes where bridges, overpasses, and road pavements can safely support the load. The following assessments and mitigation measures will be undertaken:

- Structural assessments of bridges and overpasses will be conducted along the chosen route to confirm that they can handle the weight of OSOM vehicles. Where necessary, temporary load restrictions or modifications to the bridge infrastructure may be applied.
- Pavement assessments will be conducted to ensure the roads can support heavy loads without causing permanent damage. Reinforcement of pavement layers may be required on critical sections of Lake Macdonald Drive.
- Load spreaders or tracked mats will be used to distribute the weight of OSOM vehicles and reduce the risk of road surface damage, especially on sensitive or weak pavements.

7.5.6.2 Vegetation and Clearance Management

Vegetation along the transport routes (where identified and required), will be cleared or trimmed to ensure that OSOM vehicles can pass without obstruction. This includes:

- Tree trimming to clear overhead branches and ensure adequate vertical clearance.
- Removal of obstructions, such as low-hanging wires or signs, in coordination with utility companies and local authorities.

7.5.7 Emergency Preparedness and Incident Management

7.5.7.1 Emergency Response Planning

A comprehensive emergency response plan will be developed for all OSOM movements to ensure quick and effective action in the event of an incident. This includes:

- Coordination with local emergency services to ensure they are aware of the OSOM movements and can respond quickly if necessary.
- Pre-positioning of emergency response equipment, such as spill kits and recovery vehicles, along the transport route in case of mechanical failure, accidents, or environmental incidents (e.g., fuel spills).
- Communication protocols between escort vehicles, traffic controllers, and the OSOM vehicle driver to ensure immediate response to any incidents.

7.5.7.2 Contingency Planning for Route Disruptions

In the event of unexpected route disruptions, such as road closures or adverse weather conditions, an alternative OSOM route will be identified and pre-approved by local authorities. Contingency plans will include:

- Alternative route planning for OSOM vehicles, ensuring that all necessary clearances and approvals are in place before the movement occurs.
- Temporary storage or staging areas for OSOM vehicles if transport needs to be halted due to road conditions, emergencies, or other disruptions.

7.5.8 Community and Stakeholder Engagement

7.5.8.1 Advance Notifications

Local residents, businesses, and stakeholders along the OSOM route will be notified well in advance of scheduled OSOM movements. Notifications will be provided through:

- Local bulletins, online announcements, and VMS placed along key routes to alert the public about OSOM movements, expected delays, and detour options.
- Coordination with schools, businesses, and public transport services to minimise the impact of OSOM vehicles on their daily operations, particularly near Cooroy State School and other sensitive areas.

7.5.8.2 Community Liaison

A community liaison officer will be designated to address any concerns or feedback from residents and local stakeholders regarding OSOM movements. This officer will:

- Provide regular updates on OSOM vehicle movements and any potential impacts on traffic or road conditions.
- Respond to any community concerns, such as noise or road damage, and ensure that these issues are addressed promptly.

7.5.9 Post-Transport Road Inspections and Restoration

7.5.9.1 Road Inspections

Following each OSOM movement, post-transport road inspections will be conducted to assess any damage or wear caused by the vehicle. Inspections will focus on:

- Pavement conditions, particularly at turning points, intersections, and narrow road sections.
- Bridge and culvert conditions, ensuring that no structural damage has occurred due to OSOM vehicle movements.

7.5.9.2 Road Restoration

Any damage identified during post-transport inspections will be repaired immediately. This includes:

- Pavement patching and road surface restoration where heavy vehicle movements have caused ruts, cracks, or other damage.
- Vegetation replanting and site restoration where road widening, or tree trimming has taken place to accommodate OSOM vehicles.

7.6 Contractor Liaison

Effective coordination and communication between the project team, John Holland and subcontractors are essential to the success of the LMDIP, particularly in terms of traffic management. Given the scale of the project and the involvement of multiple subcontractors, including those responsible for construction, material deliveries, and heavy vehicle operations, a robust subcontractor liaison framework is critical. This section outlines the processes for ensuring that subcontractors adhere to the TMP and that their activities are coordinated in a way that minimises disruption to local traffic and ensures safety on the project site.

The Austroads Guidelines, along with the requirements from Seqwater and other stakeholders, emphasise the need for clear communication channels and proper coordination between John Holland's and all subcontractors. The goal is to align subcontractor activities with the traffic control measures outlined in the TMP and ensure that any traffic impacts are mitigated effectively.

7.6.1 Subcontractor Responsibilities

7.6.1.1 Compliance with the TMP

All subcontractors, including those responsible for heavy vehicle operations, road upgrades, and construction work, must comply with the requirements of the Traffic Management Plan. This includes adherence to:

- Designated routes for construction vehicles, particularly on sensitive roads such as Lake Macdonald Drive.
- Speed limits, road closures, and other temporary traffic control measures.
- Protocols for OSOM vehicles, ensuring they follow approved access routes and scheduling restrictions.

7.6.1.2 Coordination of Heavy Vehicle Movements

Subcontractors must coordinate their heavy vehicle movements with the Traffic Manager to ensure that deliveries and material transport are planned in a way that minimises disruption to public roads. This includes:

- Scheduling deliveries during non-peak traffic hours to avoid conflicts with local traffic and school zones.
- Following the staggered delivery schedules outlined in the TMP to prevent road congestion and maintain safe traffic flow.
- Reporting any anticipated delays or changes to delivery schedules to the Traffic Manager as soon as they are identified.

7.6.1.3 Pre- and Post-Condition Assessments

John Holland must participate in pre-condition road assessments to document the condition of roads prior to the commencement of construction activities. This ensures that any damage caused by construction vehicles can be identified and repaired by John Holland after project completion.

John Holland will also be involved in post-construction road assessments, where they will be responsible for repairing any road damage identified during these inspections.

7.6.2 Contractor Communication and Reporting

7.6.2.1 Regular Liaison Meetings

Regular liaison meetings will be held between the Traffic Manager, Project Manager, and all contractors involved in traffic-affecting activities. These meetings will ensure:

- Clear communication of traffic management requirements and expectations.
- Updates on road conditions, upcoming road closures, or detours that may affect contractor activities.
- Coordination of heavy vehicle movements to avoid conflicts and ensure compliance with the TMP.
- Review of traffic safety incidents or near-misses, with corrective actions taken as necessary.

7.6.2.2 Daily Reporting of Traffic Movements

John Holland will be required to submit daily reports on the movement of construction vehicles, including the number of trips, the types of vehicles used, and any issues encountered. This reporting will help the Traffic Manager monitor traffic volumes and adjust traffic control measures as needed.

In the case of any traffic incidents involving construction vehicles, John Holland and subcontractors must immediately report these to the Traffic Manager, providing details of the incident, actions taken, and any proposed follow-up actions to prevent recurrence.

7.6.3 Coordination of Road Closures and Detours

7.6.3.1 Advance Notification of Road Closures

John Holland must provide advance notice of any activities that may require temporary road closures or detours. This includes providing:

- At least 48 hours' notice to the Traffic Manager for minor road closures and 5 days' notice for significant closures affecting main roads.
- Detailed information on the expected duration of the closure and any required detours, to allow time for coordination with local authorities and public notifications.

7.6.3.2 Managing Road Closures for OSOM Vehicles

For OSOM vehicles, John Holland must ensure that road closures and other traffic control measures are planned well in advance. This includes:

- Working with the Traffic Manager to coordinate the movement of OSOM vehicles during off-peak hours to minimise disruption to local traffic.
- Ensuring that any detour routes are properly signed and that road users are notified of alternative routes in advance of the vehicle movements.

7.6.3.3 Minimising Impact on Local Traffic

John Holland must work with the Traffic Manager to plan road closures in a way that minimises the impact on local traffic. This may include night work or weekend closures to reduce disruptions during peak traffic hours.

If temporary detours are required, John Holland's must ensure that adequate signage is in place and that traffic control devices are used to direct road users safely around the construction site.

7.6.4 Training and Induction

7.6.4.1 Site-Specific Traffic Management Training

All John Holland staff and subcontractors must complete the site-specific induction and traffic management training before starting work on the project. This training will cover:

- Roles and responsibilities in traffic management, including compliance with speed limits, road closures, and the proper use of designated routes.
- Emergency procedures in the event of a traffic incident, including coordination with the Traffic Manager and local emergency services.
- The importance of community safety, particularly around school zones and residential areas, and how to minimise traffic risks during construction.

7.6.4.2 Refresher Training

John Holland and subcontractors will be required to participate in refresher training if there are changes to the TMP or if any traffic safety incidents indicate a need for additional training. This ensures that all personnel remain up to date with the latest traffic management protocols and safety requirements.

7.6.5 Main Contractor Accountability and Enforcement

7.6.5.1 Monitoring Contractor Compliance

The Traffic Manager will be responsible for monitoring subcontractor compliance with the TMP, and all traffic control measures. This will include regular site audits to ensure that subcontractors are adhering to approved routes, following speed limits, and complying with road closure protocols.

Non-compliance incidents will be documented, and subcontractors found in breach of the TMP will be required to take corrective actions. Repeated non-compliance may result in penalties or the suspension of certain subcontractor activities until compliance is achieved.

7.6.5.2 Penalties for Non-Compliance

In cases of serious breaches of the TMP, such as unauthorised road closures, failure to comply with speed limits, or damage to public infrastructure, John Holland and/or responsible subcontractor/s may face financial penalties or contractual repercussions.

John Holland's will also be held accountable for any road damage caused by Project vehicles and will be responsible for repairing such damage before the handover of the road network to local authorities.

7.6.6 Liaison with Local Authorities and Emergency Services

7.6.6.1 Coordination with Local Authorities

John Holland must work closely with NSC and other local authorities to ensure that road closures, detours, and other traffic impacts are properly managed. This will include:

- Submitting road closure requests to local authorities well in advance and ensuring that all necessary permits are obtained.
- Providing regular updates on traffic management activities to ensure that the local community is kept informed.

7.6.6.2 Emergency Services Coordination

John Holland must coordinate with local emergency services to ensure that emergency access is maintained at all times. This includes:

- Ensuring that emergency services are notified of any road closures or detours that could impact response times.
- Providing direct contact details for the Traffic Manager and Project Manager in case emergency services need to access the construction site or surrounding roads during critical incidents.

The liaison process for the LMDIP is designed to ensure that all contractors involved in the project are aligned with the TMP and fully understand their responsibilities.

By establishing clear communication channels, regular reporting, and stringent compliance monitoring, the project team will ensure that construction activities are coordinated effectively, minimising traffic disruptions and ensuring the safety of all road users.

7.7 Training and Site Induction

This section outlines the training and site induction procedures that will be implemented for the project, ensuring that all workers and stakeholders are adequately prepared to manage and respond to the traffic challenges presented during the construction phase.

7.7.1 Training Requirements for Traffic Management Personnel

7.7.1.1 Traffic Controllers

All Traffic Controllers must undergo accredited traffic control training, in line with the Austroads Guidelines and local government regulations.

Controllers will be required to complete a traffic control course that covers:

- Proper use of stop-go signs, temporary traffic signals, and VMS.
- Best practices for managing traffic flow, speed reductions, and road closures around the construction site.

- Procedures for ensuring the safety of road users, construction workers, and pedestrians.

Refresher training will be provided every 12 months or as needed, based on any changes to the TMP or updated safety protocols.

7.7.1.2 Construction Supervisors and Project Managers

Construction Supervisors and Project Managers responsible for implementing the TMP will receive traffic management training that focuses on:

- Coordination with Traffic Controllers to ensure smooth traffic flow during critical construction phases.
- Understanding of site-specific traffic hazards and control measures, as outlined in the TMP and Austroads Guidelines.
- Procedures for managing emergencies and coordinating with local authorities and emergency services in case of incidents.

Supervisors and managers will also participate in scenario-based training, simulating traffic disruptions, accidents, or road closures to ensure preparedness.

7.7.1.3 Site Workers and Subcontractors

All site workers and subcontractors, including heavy vehicle operators, must attend basic traffic management awareness training to familiarise themselves with the STMP.

Training for site workers will include:

- Safe entry and exit procedures for construction vehicles.
- Understanding of speed limits, signage, and traffic control devices on and near the worksite.
- Pedestrian safety protocols, particularly near sensitive areas such as school zones and residential neighbourhoods.

Workers who operate large or heavy machinery will receive additional training on managing vehicle movements safely within the site and when entering or exiting public roads.

7.7.2 Site Induction Program

All personnel and subcontractors working on the LMDIP must complete a site-specific induction before beginning work. This induction will ensure that all staff understand the unique challenges of the project site and the specific traffic management requirements.

7.7.2.1 Induction Contents

The site induction program will cover the following key topics:

- Overview of the Traffic Management Plan: An explanation of the TMP and its importance to the overall safety and efficiency of the project.
- Roles and Responsibilities: Detailed descriptions of the roles and responsibilities of each team member in relation to traffic management, including the reporting structure for traffic-related incidents.
- Site-Specific Traffic Conditions: Information about the local road network, including details on Lake Macdonald Drive, and nearby intersections. The induction will include specific information on:
  - Narrow roads and low-visibility areas that require special attention from drivers and workers.
  - School zones and other sensitive areas where speed reductions and enhanced safety measures are in place.
- Control Measures: An overview of all traffic control measures that will be in place during construction, including speed limits, temporary road closures, detours, and pedestrian management.

- Emergency Response Procedures: Training on what to do in case of traffic-related emergencies, including coordination with emergency services, clearing roads for fire or ambulance access, and managing vehicle breakdowns on critical routes.

7.7.2.2 Onboarding Process

Every John Holland staff/worker, subcontractor, and visitor will be required to complete the site induction program prior to commencing any on-site activities. This will include both in-person and online modules to ensure comprehensive coverage.

Upon completion, workers will be issued a site induction card, which they must carry at all times while on-site. Regular audits will be conducted to ensure compliance with site induction requirements.

7.7.2.3 Additional Induction for Subcontractors

Subcontractors will undergo a tailored induction specific to their scope of work, including special requirements for heavy vehicle movements, OSOM loads, and delivery schedules to minimise disruption to traffic flow.

Subcontractors will also be briefed on the pre- and post-construction conditions of roads and the need to adhere to all TMP guidelines when using local road networks.

7.7.3 Toolbox Talks and Ongoing Training

7.7.3.1 Toolbox Talks

Regular toolbox talks will be conducted on-site to keep all workers updated on traffic management procedures, particularly when there are changes to the TMP or when specific high-risk activities are scheduled (e.g., oversized deliveries, road closures).

These talks will reinforce key messages from the induction and provide opportunities for workers to ask questions or raise concerns about traffic safety.

7.7.3.2 Ongoing Safety Audits and Feedback

Periodic safety audits will be conducted to ensure that all traffic control measures are being followed. Workers and subcontractors who do not comply with the traffic management protocols will be required to undergo refresher training.

Feedback loops will be established, allowing workers to report any issues related to traffic management. This feedback will be reviewed regularly, and adjustments to training or procedures will be made as necessary to improve traffic safety.

7.7.4 Record Keeping and Compliance

7.7.4.1 Training Records

All training and induction records will be maintained by the Project Manager and Traffic Manager. These records will document each worker's training history, site induction completion, and any refresher courses attended.

Compliance audits will be conducted regularly to ensure that all personnel working on the project have received the required training and site induction before commencing work.

7.7.4.2 Training Review and Updates

The training and induction program will be reviewed periodically to ensure that it remains up to date with any changes in Austroads Guidelines, local regulations, or the TMP.

Any significant changes in traffic management procedures will trigger a review of the training content, and workers will be required to complete updated modules as necessary.

7.8 Roadside Native Vegetation

The management of roadside native vegetation is a critical component for the success of this project, particularly in minimising environmental impacts and ensuring compliance with local and state regulations. The project area, including roads such as Lake Macdonald Drive, is located in a region with significant native vegetation, much of which provides habitat for local wildlife. Therefore, careful planning and mitigation measures are necessary to protect this vegetation while balancing the needs of construction traffic.

7.8.1 Vegetation Protection and Minimisation of Disturbance

7.8.1.1 Minimising Clearing and Disturbance

The project will take a minimal disturbance approach to roadside vegetation along Lake Macdonald Drive, and other access routes. This means that vegetation clearing will be limited to the absolute minimum required for construction activities and traffic management, such as widening roads or improving visibility at intersections.

Areas of significant ecological value, particularly those identified as habitats for protected species, will be marked as no-go zones for construction vehicles and equipment.

Temporary barriers or fencing will be erected around sensitive areas to prevent accidental damage by construction traffic or machinery.

7.8.1.2 Selective Vegetation Clearing

Where vegetation removal is unavoidable, it will be conducted using selective clearing methods to ensure that only the vegetation directly obstructing construction activities or traffic flow is removed. This includes:

- Clearing only the necessary amount of vegetation for sightlines and vehicle clearance, particularly at intersections and along narrow road sections.
- Employing qualified arborists or environmental officers to oversee vegetation removal, ensuring that it is done in accordance with environmental regulations and minimal disruption to the surrounding ecosystem.

7.8.1.3 Compliance with Environmental Regulations

All vegetation clearing activities will comply with the Environmental Protection Act, Seqwater environmental guidelines, and other relevant legislation. Any required permits for vegetation removal will be obtained prior to starting work, and compliance with these permits will be strictly monitored.

Pre-clearing ecological surveys will be conducted to identify any significant vegetation or fauna habitats, ensuring that appropriate mitigation measures are implemented to protect biodiversity.

7.8.2 Protection of Wildlife and Habitat

7.8.2.1 Fauna Protection

Prior to any vegetation clearing, an ecological survey will be conducted to identify the presence of any wildlife, particularly species of conservation significance. This survey will determine if any habitat trees, such as those used by koalas, birds, or bats, need to be protected or managed.

Fauna spotters will be employed to inspect areas of native vegetation before clearing and to relocate any displaced wildlife to safe, nearby habitats. Spotters will be present on-site during any vegetation removal activities to monitor the presence of animals and ensure they are not harmed.

If any threatened or endangered species are found during the surveys or construction activities, work will be halted in the affected areas until proper procedures for their protection and relocation can be implemented.

7.8.2.2 Wildlife Movement Corridors

To preserve wildlife movement corridors, vegetation removal will be restricted to small, isolated sections rather than large, continuous clearings. This will allow animals to continue moving through the area while construction is underway.

In areas where native vegetation is removed for road widening or access improvements, temporary wildlife crossings or fauna underpasses may be installed to provide safe passage for animals.

7.8.3 Erosion and Sediment Control Measures

7.8.3.1 Vegetation as Erosion Control

Where possible, existing native vegetation will be retained along road edges to act as a natural barrier against erosion. Vegetation helps stabilise the soil, particularly on sloped sections of Lake Macdonald Drive, reducing the risk of erosion caused by construction traffic or heavy rains.

Areas of roadside vegetation that need to be cleared will have temporary erosion control measures implemented, such as silt fences, mulch layers, or erosion control blankets to prevent sediment runoff into nearby water bodies, including Lake Macdonald.

7.8.3.2 Post-Construction Revegetation

Once construction activities are complete, any areas where native vegetation was removed will be revegetated using native species. The selection of species will be based on local vegetation types to ensure the successful re-establishment of a stable ecosystem.

Revegetation efforts will focus on restoring biodiversity, stabilizing soil, and preventing long-term erosion issues along Lake Macdonald Drive, and other affected areas.

7.8.4 Vegetation Maintenance During Construction

7.8.4.1 Ongoing Vegetation Management

Throughout the construction phase, regular maintenance will be conducted to manage any regrowth or new encroachments of vegetation onto roads or construction areas. This will involve trimming branches or low-lying shrubs to ensure clear sightlines for drivers and prevent potential hazards to construction vehicles.

Vegetation management will be carried out with minimal disturbance to the surrounding environment, and any cuttings or debris will be removed from the site to prevent additional environmental impacts.

7.8.4.2 Protection of Retained Vegetation

Protective fencing will be installed around any areas of retained native vegetation to prevent damage from construction machinery, vehicle movement, or material stockpiling. John Holland staff and subcontractors will be briefed on the importance of maintaining these protected areas and avoiding any unnecessary disturbance.

Signage will be erected around protected vegetation to mark exclusion zones, where no construction activities or vehicle movements are allowed.

7.8.5 Communication and Coordination with Environmental Authorities

7.8.5.1 Coordination with Environmental Officers

The Traffic Manager, in coordination with the Environmental Officer, will ensure that all vegetation management activities comply with environmental standards and are integrated with the broader TMP.

Regular audits of roadside vegetation management practices will be conducted to ensure that clearing limits are adhered to, erosion control measures are effective, and wildlife protection protocols are being followed.

7.8.5.2 Permitting and Reporting

All permits required for the removal or management of native vegetation will be obtained in advance, and compliance with permit conditions will be strictly monitored.

Post-clearing reports will be prepared to document the extent of vegetation removal and any fauna encountered during the process. These reports will be submitted to Seqwater and other relevant environmental authorities to demonstrate compliance with regulatory requirements.

7.8.6 Community Engagement and Awareness

7.8.6.1 Public Communication

The project team will engage with the local community to provide updates on vegetation management activities, particularly where roadside vegetation clearing is required. Information will be shared through community bulletins, social media, and on-site signage to inform residents about why certain trees or plants are being removed and how the project is mitigating environmental impacts.

Feedback loops will be established to allow community members to voice concerns about vegetation management. The project team will take this feedback into account and adjust practices where possible to minimise environmental disturbance.

7.9 Sustainable Transport Modes

Encouraging the use of sustainable transport options for workers and minimising reliance on traditional vehicle movements will not only reduce the project's carbon footprint but also alleviate congestion on local roads, especially on Lake Macdonald Drive.

7.9.1 Reducing Private Vehicle Demands

7.9.1.1 Worker Shuttle Services

To reduce the number of private vehicles traveling to and from the construction site, a worker shuttle service should be considered for construction staff. This service will transport workers between Cooroy, Noosa, and other nearby towns to the site, minimising individual vehicle trips.

The shuttle service will operate for arrival before designated working hours and to suit the expected departure time of both blue- and white-collar workers which would avoid peak traffic periods given the outlined working hours in **Table 3–3**.

7.9.1.2 Carpooling Programs

A carpooling program should be investigated to encourage workers to share rides to and from the site, reduce the number of single-occupancy private vehicle trips and minimising the environmental impact of commuting.

Workers will be provided with access to a carpooling platform or application to connect those interested in ridesharing. Incentives such as priority parking for carpool vehicles will be offered at the construction site to further encourage participation.

7.9.2 Traffic and Environmental Benefits

7.9.2.1 Reduction in Vehicle Movements

By promoting sustainable transport modes, the project aims to significantly reduce the number of vehicle trips made by workers. Fewer vehicles on the roads will reduce traffic congestion and wear and tear on local roads, such as Lake Macdonald, leading to fewer road repairs and maintenance needs.

7.9.2.2 Environmental Benefits

Reduce the number of vehicle trips made by workers will reduce the project's carbon footprint and improve local air quality. Noise pollution will also be minimised by reducing the number of vehicles operating near residential areas and schools, improving the living conditions for nearby residents.

7.9.3 Communication and Stakeholder Engagement

7.9.3.1 Promoting Sustainable Transport

The project team will engage with the workforce, local community, and stakeholders to promote the use of sustainable transport options. This will include regular toolbox talks, community updates, and the dissemination of informational materials on the benefits of using active and public transport.

Incentives and rewards will be offered to workers who regularly use sustainable transport modes, further encouraging adoption.

7.9.3.2 Coordination with Local Authorities

The project team will work with NSC and public transport providers to ensure that public transport routes remain accessible and that any disruptions caused by construction activities are minimised.

Regular updates will be provided to the community on any changes to public transport availability, walking or cycling routes, and parking facilities.

7.10 Environmental Measures

The Project involves a variety of construction activities that could potentially impact the environment. To mitigate these impacts, the TMP includes specific environmental control measures that align with Seqwater's environmental requirements, Austroads Guidelines, and other regulatory frameworks. These measures are focused on reducing the environmental footprint of the project and ensuring that traffic and construction activities are carried out in an environmentally sustainable manner.

7.10.1 Air Quality and Dust Control

7.10.1.1 Dust Suppression Measures

Dust generation is a significant concern, particularly on unsealed roads, where construction vehicle movements could cause dust emissions that affect local communities and the surrounding environment.

To mitigate this, the following dust suppression measures will be implemented:

- Increased Frequency of Water Spraying: According to TS 1300, water trucks must operate on a scheduled basis to maintain road surfaces in a damp state, particularly on unsealed roads. Watering frequency will increase during dry and windy conditions to further suppress dust. This will help mitigate the spread of dust into nearby residences and protect sensitive ecological areas from airborne particulates.
- Use of Environmentally Friendly Dust Suppression Agents: In addition to water, the use of dust suppressants that are biodegradable and environmentally safe will be considered, especially on heavily trafficked routes where water alone may not provide sufficient dust control. These agents will be selected based on their compliance with environmental regulations, as specified by TS 1300, and their ability to bind fine particles.
- Monitoring and Reporting of Dust Levels: Dust control in TS 1300 requires continuous dust level monitoring near key locations, including Lake Macdonald, local schools, and residential areas. Real-time air quality monitoring stations will be deployed at strategic locations to track particulate matter (PM10) and PM2.5 levels, with threshold limits established to trigger additional mitigation actions if exceeded.
- Fencing and Temporary Barriers: Temporary dust screens and barriers will be installed around high-risk construction zones near Lake Macdonald Drive. These barriers will reduce the movement of dust off-site and into adjacent sensitive areas, helping maintain air quality around the construction zones.

- Water trucks will be used regularly to dampen the road surfaces and prevent dust from becoming airborne during vehicle movements, especially in dry weather conditions.
- Speed limits on unsealed roads will be reduced to further limit the generation of dust.

7.10.2 Air Quality Monitoring

Air quality monitoring stations will be set up at key points along Lake Macdonald Drive. These stations will track dust and particulate matter levels to ensure that they remain within acceptable limits.

If dust levels exceed regulatory thresholds, construction activities will be halted, and additional dust suppression measures will be implemented before work resumes.

7.10.3 Noise and Vibration Management

7.10.3.1 Noise Control Measures

Construction activities, particularly those involving heavy vehicles, equipment, and machinery, have the potential to generate noise that could disturb nearby residents and wildlife. The following noise control measures will be put in place:

- Heavy Vehicles recommended not to use engine breaks within Cooroy township past residential areas and sensitive receptors such as Cooroy State School and Milestones Early Learning.
- .
- Noisy construction activities will be restricted to designated working hours (6:30 am to 6:30 pm on weekdays, 6:30 am to 4:00 pm on Saturdays) to minimise disturbances during early mornings and evenings.
- Sound-dampening equipment will be used on construction machinery where possible, including mufflers and other noise-reducing devices.
- Real-time Noise Monitoring: Continuous noise monitoring will be conducted at sensitive locations such as schools and residences to ensure that noise levels remain within acceptable limits. If noise levels exceed regulatory thresholds, construction will cease until additional noise mitigation measures, such as re-routing machinery or adjusting operating hours, are implemented.
- Communication of Noise Impacts: The project team will regularly communicate expected noise levels and activities to local residents, schools, and businesses. Advance notifications will be issued prior to any high-noise activities, as required by TS 1300, giving the community time to prepare or make adjustments to their schedules.

7.10.3.2 Vibration Management

To prevent damage to nearby structures and avoid disturbing local wildlife, vibration levels will be closely monitored, particularly during the use of pile drivers, compactors, and heavy machinery. The following measures will be implemented:

- Vibration monitoring systems will be installed near residential areas, schools, and heritage sites to track ground vibrations.
- If vibration levels exceed acceptable limits, construction activities will be halted, and alternative methods will be explored to reduce vibration impacts.

7.10.4 Erosion and Sediment Control

7.10.4.1 Erosion Control Measures

Lake Macdonald Drive, and other access routes pass through areas prone to erosion, particularly during periods of heavy rain. To mitigate this risk, erosion control measures will be implemented, including:

- Silt fences and erosion control blankets will be installed along road embankments and other vulnerable areas to prevent sediment runoff into nearby water bodies.

- Temporary drainage channels will be constructed to direct water away from road surfaces and reduce the risk of washouts or erosion during construction.
- Vegetation retention will be prioritized to help stabilise soil and prevent erosion along road shoulders and embankments. Where vegetation removal is necessary, immediate revegetation efforts will be undertaken after construction.

7.10.4.2 Sediment Management

To prevent sediment from entering local waterways, such as Lake Macdonald, strict sediment control measures will be enforced:

- Sediment traps will be placed at key drainage points to capture runoff from construction areas.
- Regular inspections will be carried out to ensure that sediment control structures are functioning properly and are not clogged by debris or excessive runoff.

7.10.5 Water Resource Protection

7.10.5.1 Runoff and Watercourse Protection

Given the proximity of the project site to Lake Macdonald and its associated watercourses, it is critical to protect these water resources from contamination by construction activities. The following water protection measures will be in place:

- Spill containment kits will be stationed at key points along the construction site and vehicle access routes to manage accidental fuel or chemical spills.
- Watercourse buffers will be established along construction routes, ensuring that no construction vehicles or materials enter protected water zones.
- All refuelling and vehicle maintenance activities will occur within designated, lined containment areas to prevent runoff from contaminating nearby water bodies.
- Spill Response Procedures: TS 1300 mandates the development of a spill response plan for accidental fuel or chemical spills near water bodies. Spill kits will be available at key locations, and all workers will be trained in rapid spill containment and clean-up procedures.

7.10.5.2 Stormwater Management

Stormwater management systems will be installed to capture runoff from construction areas, particularly near Lake Macdonald Drive where heavy vehicle movements could increase the risk of water contamination. These systems will include:

- Sediment basins to capture runoff before it enters local waterways, allowing sediments and pollutants to settle before the water is discharged.
- Grated stormwater drains and culverts will be installed or upgraded to ensure proper drainage and prevent the pooling of water, which could lead to erosion and contamination.

7.10.6 Biodiversity and Habitat Protection

7.10.6.1 Fauna Protection Measures

The construction site is located in a region with significant biodiversity, including species that are sensitive to noise, vibration, and habitat disturbance. To protect local fauna, the following measures will be enforced:

- Fauna spotters will be employed during vegetation clearing activities to safely relocate any animals that may be displaced. Special attention will be given to koalas, birds, and other protected species that may be present in the project area.
- Wildlife corridors will be maintained to allow animals to safely navigate through or around construction zones, with additional fauna crossings implemented where necessary.

7.10.6.2 Vegetation and Habitat Conservation

To minimise the impact on local vegetation, particularly native species, vegetation removal will be limited to only what is necessary for road widening and construction access. Areas with significant ecological value will be marked as no-go zones to avoid unnecessary damage.

Revegetation efforts will be undertaken in any areas where native vegetation is disturbed. Native plant species will be used to restore biodiversity and stabilise the soil to prevent erosion.

7.10.7 Waste Management and Recycling

7.10.7.1 Construction Waste Minimization

A waste management plan will be implemented to minimise the amount of construction waste generated and ensure proper disposal of materials. This includes:

- Sorting and recycling construction waste, such as concrete, steel, and timber, to reduce the volume of waste sent to landfills.
- Designating specific areas for waste storage and disposal to prevent materials from being scattered or entering nearby water bodies.

7.10.7.2 Hazardous Material Disposal

Any hazardous materials used during construction, including chemicals, fuel, and oils, will be stored in containment units and disposed of in accordance with environmental regulations. John Holland and subcontractors will be required to follow strict handling and disposal protocols to prevent contamination of the surrounding environment.

7.10.8 Environmental Monitoring and Compliance

7.10.8.1 Regular Environmental Audits

Environmental officers will conduct regular site audits to ensure compliance with all environmental measures outlined in the TMP and regulatory requirements. These audits will cover:

- Monitoring of dust, noise, and vibration levels to ensure compliance with project limits.
- Inspections of erosion control structures, sediment traps, and stormwater management systems to ensure they are functioning properly.
- Regular checks on wildlife protection measures to ensure that fauna spotters are in place and that no animals are being harmed by construction activities.

7.10.8.2 Reporting and Documentation

All environmental monitoring and compliance activities will be documented and submitted to Seqwater, NSC, and other relevant authorities to demonstrate compliance with environmental regulations.

In the event of any environmental breaches or incidents, immediate corrective actions will be taken, and a report will be submitted to the relevant authorities detailing the cause of the breach and the measures implemented to prevent recurrence.

8. Monitoring, Inspection and Auditing

8.1 Monitoring and Inspection

In order to ensure the effectiveness of the TMP, the plan must be monitored, and traffic management works inspected regularly.

The aim of the plan is to reduce the impact of the construction traffic on the surrounding road network. Hence it is important to monitor that this is being achieved to reflect any physical or operational changes to the road network.

For example, road network changes may have occurred, such as public transport routes or timetabling or intersection alterations may affect the operation of intersections and how traffic management is implemented.

As such, it is recommended that Seqwater review the TMP approximately one month after construction has commenced and half-way through the project cycle to ensure that the TMP is relevant. Consultation may be required with key stakeholders and/or other parties to ensure the latest information from stakeholders.

The TMP should also be updated if any notable changes affecting the expected or actual traffic volumes generated by site works occur, or if changes to working hours, delivery scheduling or other factors of consequence affecting site traffic and transport are proposed.

Seqwater will audit the TMP as part of the inspections processes and also ensure John Holland produced STMP and other plans take into account the prescribed recommendations.

Any identified deficiencies should be reported immediately to the site supervisor/works manager, and rectification carried out immediately to maintain safety and integrity of the TMP.

8.2 Auditing

In accordance with the Road Management Act 2004 and Seqwater's Compliance Program audits of the traffic management plan will be undertaken to achieve worksite safety both within and outside of the works site. The audits may include:

- Compliance Audits: to verify compliance with the TMP, typically undertaken as follows:
  - At the commencement of works (and at times of erecting any traffic control devices).
  - At any changes to the TMP (maybe due to unforeseen hazards).
  - During both day / night operations for long term works (not considered applicable in this case but should be mindful).
  - If the TMP results in significant disruptions to traffic (considered to be minimal in this case).
  - If requested by health and safety representative, employees, or local community.
- Road Safety Audits: Only if significant construction works on local road network that this needs to be considered. It is likely that the priority access intersection and haul routes should be subject to RSAs to ensure that these safely facilitate the expected vehicular movements.
- Records of all audits will be kept by Seqwater and made available to TMR and NSC on request. All audits will be undertaken by suitably qualified and experienced personnel.

8.2.1 Regular Safety Audits

8.2.1.1 Scheduled Safety Audits

Scheduled safety audits will be conducted at regular intervals throughout the construction phase to assess the effectiveness of the TMP and ensure that all safety measures are being followed. These audits will:

- Be conducted frequently during periods of high construction activity or when traffic management measures change, in line with the requirements of TS 1300.
- Cover all aspects of the project, including road safety, site access, vehicle movements, pedestrian safety, and the condition of traffic control devices such as signage and barriers.
- Include inspections of high-risk areas, Lake Macdonald Drive, and school zones, to ensure compliance with safety protocols and traffic control measures.

8.2.1.2 Ad-hoc Safety Inspections

In addition to scheduled audits, ad-hoc safety inspections will be conducted in response to specific incidents, community complaints, or significant changes in construction activities. These inspections will allow for:

- Immediate assessment and response to emerging safety issues.
- Rapid identification of non-compliance or unsafe conditions, with corrective actions implemented promptly.

8.2.1.3 Audit Scope and Focus Areas

Safety audits will focus on key elements such as:

- Traffic flow and the proper use of detours and lane closures.
- Signage visibility and the effectiveness of VMS in communicating road conditions and construction activities to the public.
- Heavy vehicle movements, particularly in school zones and near residential areas, ensuring compliance with restricted access hours and speed limits.
- Worker safety measures, including the use of personal protective equipment (PPE), safe vehicle entry and exit protocols, and compliance with site induction and training.

8.2.1.4 Audit Documentation and Reporting

Detailed audit reports will be prepared following each safety audit, documenting:

- The findings of the audit, including any safety issues or non-compliance identified.
- Corrective actions recommended to address any safety risks, with deadlines for implementation.
- An assessment of the effectiveness of existing safety measures, along with suggestions for improvement.

Audit reports will be shared with Seqwater project management, John Holland, and relevant stakeholders, including TMR and NSC, to ensure transparency and accountability.

8.2.2 Compliance Monitoring

8.2.2.1 Continuous Monitoring of Traffic Control Measures

Continuous monitoring of all traffic control measures will be carried out to ensure they are functioning effectively and remain compliant with TS 1300 requirements. This includes:

- Ensuring that road signage, barriers, and traffic signals are properly positioned, clearly visible, and fully operational.
- Monitoring road conditions to prevent hazards such as potholes, loose gravel, or poorly maintained surfaces that could pose risks to both construction vehicles and the public.
- Checking the effectiveness of speed control measures, particularly in school zones, near pedestrian crossings, and along Lake Macdonald Drive.

8.2.2.2 Worker Compliance with Safety Protocols

Compliance monitoring will extend to all site workers, John Holland staff, and subcontractors, ensuring adherence to safety protocols and traffic management procedures. This will involve:

- Regular safety briefings and toolbox talks to reinforce traffic safety rules and the correct use of PPE.
- Site induction checks to confirm that all workers have completed the necessary training and understand the TMP's requirements.
- Monitoring worker entry and exit procedures, particularly for heavy vehicles, to ensure that vehicles are safely parked, and entry points are clear of hazards.

8.2.2.3 Use of Technology for Compliance Monitoring

John Holland is working with the preferred quarries to assist with control measures in relation to haulage to and from site. Some of the controls that are being set up as follows:

- All major delivery trucks to be fitted with a Telematics system/device tracking all movement to and from site for all deliveries. Data recording to include:
  - Global Positioning System tracking and geo-fencing alerts
  - Fatigue management
  - Speed violations
  - Route compliance
  - Load & Mass Control.

8.2.3 Non-Compliance Management and Enforcement

8.2.3.1 Identification of Non-Compliance

Non-compliance incidents may be identified during safety audits, inspections, or through monitoring systems. Common non-compliance issues may include:

- Failure to adhere to speed limits, especially in school zones or near construction access points.
- Improper use or placement of traffic control devices.
- Workers not following safety protocols, such as using PPE or failing to adhere to safe vehicle movement procedures.

8.2.3.2 Corrective Actions and Enforcement

In cases of non-compliance, immediate corrective actions will be implemented to resolve the issue and prevent future occurrences. Corrective actions may include:

- Repositioning signage, barriers, or traffic control devices to ensure compliance with safety standards.
- Re-training workers or traffic controllers to ensure they understand and follow safety protocols.
- Implementing speed calming measures or additional traffic controls in areas where heavy vehicles are not adhering to speed limits.

Enforcement measures for repeated non-compliance may include:

- Fines or penalties for contractors / subcontractors who fail to comply with traffic safety requirements.
- Suspension of work for specific teams or individuals until compliance with the TMP and safety protocols is achieved.

8.2.4 Safety Reporting and Feedback

8.2.4.1 Incident Reporting and Response

A formal incident reporting system will be in place to ensure that all safety incidents, near-misses, or breaches of the TMP are documented and addressed. This system will include:

- Immediate reporting of incidents to the Traffic Manager and Project Manager, with follow-up investigations to determine the cause.
- Implementation of corrective measures to prevent recurrence, such as additional safety training or adjustments to traffic control measures.

8.3 Community and Stakeholder Communication and Feedback

To ensure that local residents and stakeholders are informed of construction traffic impacts a comprehensive Stakeholder Management Plan (JH Document Number: 7225-JHG-MPL-CSM-001) has been developed and approved for the Project. The following communication strategies will be implemented to ensure stakeholders, subcontractors, and the local community are informed on the Projects status and any safety concerns are addressed proactively:

- Community hotlines or online platforms where local residents can report traffic safety issues or concerns.
- Regular traffic updates will be provided to residents, schools, and businesses, informing them of any changes to traffic conditions, road closures, or construction activities.
- Regular meetings with stakeholders, including NSC and local businesses, to review safety performance and discuss potential improvements.
- Stakeholder engagement with local schools, such as Cooroy State School and Milestones Early Learning Centre, will ensure that any impacts on school operations are minimised.

The Communication and Engagement Action Plan outlines a wider range of stakeholders and engagement methods as below:

- Community events / shows
- Community Reference Group meetings
- Corflute signage with QR scans to website for trail updates
- Direct contact with directly impacted residents and recreational users
- Doorknocking
- Emails and SMS
- Face-to-face sessions including coffee morning, site tours, stakeholder meetings, Cooroy community markets,
- Fact Sheets published and distributed via website, email, newsletters
- Initial phone calls and follow up phone calls
- Input into Cooroy State School newsletters
- Letterbox drop newsletters and works notifications
- Local Chamber of commerce
- Media statements
- Notification flyers and e-updates
- One-on-one meetings

- Project website
- Site signage
- Social media such as local community Facebook page
- VMS.

Feedback from these sources will be used to adjust the TMP and implement new safety measures as needed, ensuring continuous improvement in traffic safety and compliance with TS 1300 requirements.

8.4 Compliance with Seqwater Technical Specifications and Regulatory Standards

8.4.1 Adherence to TS 1300 Safety Requirements

The TS 1300 Principal's Project Requirements sets forth stringent safety standards that must be adhered to throughout the project. All safety audits and compliance monitoring activities will align with these standards to ensure that:

- Traffic control measures and vehicle movements comply with local, state, and national traffic safety regulations.
- Worker safety and public safety are prioritized, particularly in high-traffic areas, near schools, and on sensitive routes like Lake Macdonald Drive.

8.4.2 Compliance with Local and National Regulations

All safety audits and monitoring activities will also comply with relevant Australian Standards and Austroads Guidelines to ensure that traffic management meets the highest safety standards.

Regular reporting to Seqwater, NSC, and other regulatory bodies will ensure that all safety measures are documented and approved, ensuring accountability and transparency throughout the project.

Appendix A

Conditions and Stakeholder Requirements Register

A-1 Coordinator-Generals Evaluation Report Register

Traffic and transport requirements from Coordinator-Generals Evaluation Report, May 2019

Requirement Report Reference	Request / Condition No.		Details	TMP Reference	Response
Appendix 2. Imposed conditions – Schedule 1. Management of environmental impacts		(a) - (iv)	Notes in accordance with Condition 1, the following adaptive construction environmental management plans (CEMPs) are to be prepared: (iv) traffic management plan.	This document.	The TMP forms part of the CEMP and has been prepared with stakeholder consultation.
	Condition 3. Construction environmental management plans *Note – entity with jurisdiction for this condition is the NSC*	(b)	The CEMP's must be prepared and implemented for all aspects of the Six Mile Creek Dam Safety Upgrade project, and must incorporate: (i) specific performance measures (e.g., release criteria, setbacks as relevant) to minimise impacts on nuisance sensitive places from construction activities (ii) actions that will avoid or mitigate and manage adverse environmental impacts on waters, traffic and the community (iii) appropriate adaptive management practices and details of how and when the practices will be implemented to address any non-compliance with performance measures (iv) relevant monitoring and auditing requirements.	Avoid impacts refer to **Section 3.4.1.3.1**. Mitigation refer to **Section 5**. Control measures refer to **Section 7**. Monitoring and auditing refer to **Section 8**.	The TMP addresses the avoidance and mitigation of environmental impacts. It also specifies traffic control measures for sensitive locations, such as school zones, and includes monitoring protocols.
		(c)	The approved CEMPs must be provided to NSC with any development application for a material change of use associated with the project.	-	This TMP is to be submitted to NSC as part of the broader CEMP when seeking approval for material changes in land use or traffic impacts.
	Condition 6. Construction vehicle haulage *Note – entity with jurisdiction for this condition is the NSC*	(a)	Construction vehicle site access is limited to a single access route in and out of Lake Macdonald Drive. 'Construction vehicle' does not include light motor vehicles such as cars, utes and motorbikes (including mopeds and tricycles), or specialised vehicles where prior approval from NSC has been obtained (e.g., vehicle required for site establishment and demobilisation works, and salvage and relocation). *Note although not set-out in the conditions it was noted from the evaluation report that any heavy vehicle construction traffic will not use the eastern access route to the site due to the nature and context of the roads, particularly the Sivyers-Gumboil-Collwood Roads section.*	Section 4.1	Vehicle access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway as outlined in the TMP. A secondary heavy vehicle route is required to/from Noosa for concrete deliveries. This will be via Stated Controlled Road including Cooroy – Noosa Road to Elm Street and north to Lake Macdonald Drive. No heavy vehicle access via the eastern route (Sivyers-Gumboil-Collwood Roads section) is permitted.
		(b)	Any laden construction vehicle must have its load fully covered and secured.	Section 5.3	Requirements included for load coverings and securing in the TMP to ensure compliance with this condition.
		(c)	Construction vehicles must not arrive at the site prior to the approved operating hours and must not leave the site with either a full or partial load after the approved operating hours.	Section 7.3	The TMP strictly regulates operating hours for construction vehicles, ensuring compliance with Seqwater and NSC guidelines. Further, monitoring is outlined with telematics systems which will allow auditing if any issues or non-compliances raised.
	Condition 7. Road Impact Assessment *Note – entity with jurisdiction for this condition is the NSC*	(a)	The proponent must undertake a detailed road impact assessment that confirms any upgrades or other road works required to be undertaken because of the project and its traffic, including to Lake Macdonald Drive, and the Lake Macdonald Drive-Seqwater access road intersection.	Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** and further summarised on **Section 5.2**.	The latest TIA included as **Appendix B** provided the full assessment of the Project with the latest information and confirms any upgrades or other road works required.
		(b)	The road impact assessment must be provided to NSC for approval at least two months prior to commencement of any on-site project works.	Refer Appendices B, C and D.	As part of this TMP, the latest assessments are included as appendices for the whole Project. Note the main works will commence in March 2025 which provides at least a two-month period prior to the main works commencing.
		(c)	Any road upgrades or road works required by the approved road impact assessment must be incorporated into the traffic management plan required under Schedule 1, Condition 3.	Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** and further summarised on **Section 5.2**.	Necessary road upgrades, as identified in the updated TIA are referenced in the TMP.

Requirement Report Reference	Request / Condition No.		Details	TMP Reference	Response
		(d)	Detailed engineering plans for all road upgrades or road works must be submitted to NSC for approval prior to commencement of works. The road upgrades and works must be designed in accordance with the relevant Austroads standards and the Department of Transport and Main Roads standard drawings and specifications.	N/A	Detailed engineering plans for all road upgrades to be supplied in follow-up stages and shall be in accordance with the relevant Austroads standards and the Department of Transport and Main Roads standard drawings and specifications.
Appendix 5. Coordinator General's recommendations Recommendation 2. Project specific information requirements for Material change of use – concrete batching plant (a) The proponent is to provide NSC with the following information in support of use application for the concrete batching plant.	(vi) a Traffic Impact Assessment of Lake Macdonald Drive extending from the intersection with Elm Street to the site access driveway for traffic associated with the concrete batching plant and including but not be limited to the following:	(A)	Pavement impact assessment in accordance DTMR's Pavement Impact Assessment Practice Note for Lake Macdonald Drive and the intersection with Elm Street prior to commencement of concrete batching plant activities at site.	Road Impact Assessment for LMDIP (December 2020) – Refer **Appendix E.**	Previously been completed by SMEC (Report dated 8 December 2020)
		(B)	Dilapidation report for Lake Macdonald Drive and the intersection with Elm Street.	Dilapidation Report for LMDIP (June 2024) – Refer **Appendix D.**	As part of this TMP, the latest assessments are included as noted.
		(C)	Safety review in accordance with DTMR's Route Assessment Guidelines for Multi-Combination Vehicles in Queensland for Lake Macdonald Drive and the intersection with Elm Street.	Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C.**	A road safety audit, adhering to Austroads Guide to Road Safety, Part 6: Road Safety Audit 2022 (AGRS6) completed by SMEC, November 2024. Note, the largest design vehicle for regular movements will be a semi-trailer. Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** for swept path assessment and concept Traffic Guidance Scheme in **Appendix G-1** for the early works phase.
		(D)	Recommendations for any necessary improvement works to Lake Macdonald Drive and the intersection with Elm Street to cater for the proposed traffic (number and vehicle types).	Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C.**	A road safety audit, adhering to Austroads Guide to Road Safety, Part 6: Road Safety Audit 2022 (AGRS6) completed by SMEC, November 2024. Note, the largest design vehicle for regular movements will be a semi-trailer. Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** for swept path assessment and concept Traffic Guidance Scheme in **Appendix G-1** for the early works phase.
		(E)	The number and type/size of trucks travelling to and from the site.	Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** and a summary as outlined on **Section 3.4**.	The latest TIA included as **Appendix B** provided the full assessment of the Project with the latest information including the number and type/size of trucks travelling to and from the site .
	(vii) The Traffic Impact Assessment should include details of traffic impacts both during construction and operation of the concrete batching plant.			Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** and a summary as outlined on **Section 3.4**.	The latest TIA included as **Appendix B** provided the full assessment of the Project with the latest information including materials delivered for the concrete batching plant.

A-2 TMP addressed TMR comments from 2021

Report / Area	Item No.	TMR Comments 2021	TMP Reference	Response
Traffic Impacts	1	The primary access route through Cooroy to Lake Macdonald Drive requires access via State Controlled Roads (SCR) from either the north or south. To mitigate impacts to local traffic, the preferred route to Lake Macdonald Drive is for all incoming heavy vehicle access to be from the north via Exit 237 on the Bruce Highway. Two exit options have been identified: - Exit Option 1 – exit north along Elm Street - Exit Option 2 – exit south along Elm Street Both exit options have advantages and disadvantages as stated in the TMP. Due to the deficiencies identified at the Myall and Elm Street intersection, TMRs preference is for Exit Option 1.	Section 4.1	Vehicle access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway as outlined in the TMP. A secondary heavy vehicle route is required to/from Noosa for concrete deliveries. This will be via Stated Controlled Road including Cooroy – Noosa Road to Elm Street and north to Lake Macdonald Drive. No heavy vehicle access via the eastern route (Sivyers-Gumboil-Collwood Roads section) is permitted.
Traffic Impacts	2	Performance of haulage routes should be monitored in the early stages to ensure routes are performing as expected and there are no issue or unforeseen traffic impacts. TMR would like to be informed of the final route selection.	Section 8.2.2.3	All delivery trucks to be fitted with a Telematics system/device tracking all movement to and from site for all deliveries.
Traffic Impacts	3	Exit Option 1: Due to the include on Lake Macdonald Drive and the increase in heavy vehicle traffic from the project, visibility at the intersection of Lane Macdonald Drive and Elm Street does present a challenge for drivers turning right from Lake Macdonald Drive. TMR notes a turnability assessment into Lake Macdonald Drive from the north is required. Assessment should include simultaneous turn-in and turn-out truck movements. If the proposal to implement temporary traffic control during peak heavy vehicle times for trucks turning right from Lake Macdonald Drive is implemented, it would need to operate outside of normal peak traffic times.	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B**	Swept path assessment has been completed and identified truck and dog can simultaneous turn-in and turn-out, however, semi-trailers can't. An upgrade is identified to mitigate this existing issue. For the early works phase refer **Appendix B** for swept path assessment and concept Traffic Guidance Scheme in **Appendix G-1** for the early works phase.
Traffic Impacts	4	Traffic Management Plans (TMPs) will need to be submitted and approved by TMR. Any changes to the project TMP should be communicated to TMR.	This document	Noted.
Cooroy State School	1	Restriction of truck movements is essential past the school within the school zone period from 7:00am-9:00am and 2:00pm-4:00pm, weekdays to minimise impacts to school traffic and children. The proposal to limit truck speeds to 40km/h within the school zone at all times is also noted. Further restriction of truck movements outside of peak traffic hours from 2:00pm-5:00pm would further minimise impacts to the nearby school and local community. TMR notes compliance will be monitored. How will compliance with these restrictions be monitored and enforced?	Section 8.2.2.3	Reduced heavy vehicles are noted addressed in Traffic Impact Assessment for LMDIP (November 2024) – Refer Appendix B and a summary as outlined on Section 5.3. For compliance, monitoring and enforcement all major delivery trucks to be fitted with a Telematics system/device tracking all movement to and from site for all deliveries.
Truck Marshalling Area	1	The proposed truck marshalling area to manage inflow of heavy vehicles along Elm Street between Exit 237 on the Bruce Highway and the school zone near Cooroy State School will need approval from TMR if it is on or adjacent to the SCR. There is no obvious truck parking location in this area, so careful planning and management will be required for this to operate successfully.	Section 7.4.1	If required, a marshalling area has been identified on Elm Street prior to the Cooroy township.
Quarry at Kin Kin	1	The quarry located at Kin Kin is the source for concrete aggregate. There is an active community group opposing the volume of truck movements generated by the quarry at Kin Kin, with active media coverage. Consideration should be given on how to manage impacts and consultation should be held with the local community. The LMDU project team should provide contact information and prepare briefing information to TMR to assist in responding to anticipated enquiries.	Section 8.3	The quarry at Kin Kin is an approved operation which is outside the control of this Project. To ensure that local residents and stakeholders are informed of construction traffic impacts a comprehensive Stakeholder Management Plan (JH Document Number: 7225-JHG-MPL-CSM-001) has been developed and approved for the Project.
Consultation	1	TMR supports the 'no surprise' approach to stakeholders and the community to make them aware of all haulage routes, road diversions and closures. The Cooroy community should be consulted on the LMDU project, including community and traffic impacts and mitigation and management of these impacts. The Cooroy State School should also be consulted on traffic management and mitigation of traffic impacts. Early community engagement including use of portable variable message signs, should be considered. The LMDU project team should provide contact information and prepare briefing information to TMR to assist in responding to anticipated enquiries.	Section 8.3	Consultation Manager report provided with engagement between JHG, Seqwater and Cooroy State School and Milestones Early Learning.
Pavement Impact Assessment	1	Please send a copy of the pavement impact survey on SCRs to TMR.	Dilapidation Report for LMDIP (June 2024) – Refer **Appendix D**	Previously been completed by SMEC (Report dated 8 December 2020).

Report / Area	Item No.	TMR Comments 2021	TMP Reference	Response
Traffic Impact Assessment	1	A SIDRA sensitivity analysis over the indicated three-year period to understand the impact of growth would be desirable. The SIDRA analysis should further indicate the impact caused by the grade noted in the Lake Macdonald Drive departure route.	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B**	Updated TIA has considered background growth to 2028 which is peak construction period a conservative growth rate. This was for all project key intersections.
Road Safety Audit	1	Section 1.2.2 of the Road Safety Audit has determined that Seqwater does not propose to address or analyse any safety issue that has an expensive solution. If Seqwater is going to be making a particular situation worse, they should investigate mitigation as part of their project to ensure operations can be undertaken safely. Mitigation may include consideration of infrastructure or traffic management options or solutions.	Section 5.2.1	An intersection upgrade of Elm Street / Macdonald Drive is proposed.
Section 6.1.1 Myall Street intersection	1	The audit has identified deficiencies at the intersection of Elm and Myall streets. The TMP for construction works should avoid directing heavy vehicle traffic through this intersection. TMR has current planning for upgrading this intersection, however, there is no funding in the program for development or implementation of upgrades at this time.	N/A	HV access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway (Option 1). Option 2 to exit to the south (via Myall Street) is not proposed for HV's.
Section 6.1.2 Myall Street intersection	1	A likely conflict with the turn path for 25 metre heavy vehicles has been identified at the intersection. The TMP for construction works haulage route Exit Option 1 avoids the intersection and Exit Option 2 proposes only south direction travel through the intersection which limits traffic impacts. Exit Option 1 is the preferred route.	N/A	HV access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway (Option 1). Option 2 to exit to the south (via Myall Street) is not proposed for HV's.
Section 6.1.3 Myall Street intersection	1	Pavement markings are deteriorated at the intersection. TMR will prioritise line marking maintenance at this intersection.	N/A	HV access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway (Option 1). Option 2 to exit to the south (via Myall Street) is not proposed for HV's.
Section 6.1.4 Myall Street intersection	1	Vegetation is overgrown and obstructing sight distance and road signage. TMR will prioritise vegetation maintenance at this intersection.	N/A	HV access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway (Option 1). Option 2 to exit to the south (via Myall Street) is not proposed for HV's.
Section 6.1.5 Elm Street – Myall Street to Lake Macdonald Drive	1	Operational deficiencies have been identified at the Diamond Street intersection. Planning has been undertaken for an upgrade for an upgrade to this intersection, however, these is currently no funding in the program for development or implementation of upgrades.	N/A	HV access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway (Option 1). Option 2 to exit to the south (via Myall Street) is not proposed for HV's.
Section 6.1.6 Elm Street – Myall Street to Lake Macdonald Drive	1	Elm Street is on the Principal Cycle Network but has minimal on-road provisions for cyclists. There are opportunities on the existing pavement to line mark a cycle lane at high-risk locations or instate Bicycle Awareness Zone (BAZ) markings. TMR will consider options, however, there is no current planning or funding for this section of road.	N/A	HV access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway (Option 1). Option 2 to exit to the south (via Myall Street) is not proposed for HV's.
Section 6.1.7 Elm Street –Lake Macdonald Drive to Gern Street	1	The continuity line is deteriorated at the car park exit of the Cooroy State School. TMR will prioritise line marking maintenance at this location.	Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C**	Noted as still a risk in the latest RSA. TMR to undertake regular maintenance.
Section 6.2.1 Elm Street / Lake Macdonald Drive intersection	1	The auxiliary left-turn (AUL) into Lake Macdonald Drive operates as a trap lane with minimal advanced warning. There is a risk of vehicles suddenly merging into the through area. This lane arrangement has been in place for over 20 years and there are no crash records associated with a trapped lane. Performance should be monitored during the project and emerging issues mitigated appropriately.	Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C**	Noted as still a risk in the latest RSA. Performance to be monitored during the project and emerging issues mitigated appropriately.
Section 6.2.2 Elm Street / Lake Macdonald Drive intersection	1	Low handing vegetation to the inside of the horizontal curve on Elm Street encroaches into the shoulder and traffic lane. This is a hazard for cyclists and vehicles. TMR will prioritise vegetation maintenance at this intersection.	Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C**	Noted as still a risk in the latest RSA. TMR to undertake regular maintenance.
Section 6.2.3 Elm Street / Lake Macdonald Drive intersection	1	Green surface treatment and cyclist pavement markings are deteriorated at the intersection TMR will prioritise line marking maintenance at this location.	Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C**	Noted as still a risk in the latest RSA. TMR to undertake regular maintenance.
Section 6.3.1 – 5 Sivyers Road intersection	1	Concerns with the unprotected right-hand turn, vegetation, guideposts, reflective raised pavement markers, line marking and night-time lighting. TMR notes the Coordinator General's condition that heavy vehicles are not permitted to utilise Sivyers Road to access the site. The TMP states the Colwood Road / Sivyers Road access to the site will be used for Seqwater vehicles and other vehicles required for the Noosa Water Treatment Plan. The exemption being that construction vehicles will be permitted to access Collwood Road / Sivyers Road for entry/exit to the site in the event of flooding and in consultation with and approval of Seqwater. Traffic control should be considered for this scenario.	Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C**	Upgrade of channelised right turn lane completed. No heavy vehicle access via the eastern route (Sivyers-Gumboil-Collwood Roads section) is permitted. In the event of flooding, alternative route for any construction vehicle from the east would be to continue on Cooroy – Noosa Road to Elm Street and not use Sivyers-Gumboil-Collwood Roads section or Swift Drive.

Report / Area	Item No.	TMR Comments 2021	TMP Reference	Response
		Vegetation and delineation concerns will be passed to TMR's maintenance team for prioritisation. TMR has an intersection upgrade planning for this intersection which includes a channelised right turn lane. Construction is planned for commencement in mid-2022.		Outstanding items noted as still a risk in the latest RSA include - Vegetation, guideposts, reflective raised pavement markers, line marking and night-time lighting.

A-3 TMP addressed TMR comments from 2023

TMP addressed TMR comments from 2024

Report / Area	Item No.	TMR Comments 2024	TMP Reference	Response
Engagement	1	No further traffic information / TMP provided since 2021, or engagement has taken place.	Appendix H-3	Engagement has been undertaken as part of preparing this TMP.
Safety	2	Does not align with the intention of the safety assessment outlined in the CGER section 5.7.6, or Appendix 2, schedule 1, Condition 3. No detailed safety audit or assessment of the impacts of the haulage route on the state-controlled road network, particularly through Cooroy. Expectation is that a TMP will be provided that adequately identities safety risks and mitigation solutions before construction commences to ensure these risks are avoided, mitigated or managed appropriately and proactively rather than in response to an incident.	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** Road Safety Audit for LMDIP (November 2024) – Refer **Appendix C**	Undertaken as part of preparing this TMP noting limited construction vehicle permitted through Cooroy.
Safety	3	Key concern is the intersection of Elm Street and LMD. Following review further: TMP notes constraints with intersection which are proposed to be addressed by drivers reducing speeds and giving way to oncoming traffic with a contingency route for vehicles unable to make the turn into LMD (TMP not clear how the contingency route is intended to be managed and should be further detailed and assessed). Submitted turn paths confirm that when HVs are approaching the intersection from the north the HVs have to sit in the median to be able to turn left into LMD, which is an unsafe movement and potentially contrary to the road rules. The left turn path on LMD conflicts with the expected queue of vehicles, particularly the AM peak queue, waiting to exit onto Elm Street. Appears to be insufficient sight distance for southbound traffic travelling on Elm Street to have sufficient time to react to slow moving traffic turning out of LMD. Elm Street and LMD form part of an existing 25m B-Double route, however the approved route is for the southern approach on Elm to turn right in and left out of LMD Based on the information in the TMP it appears that Elm Street / LMD intersection will need to operate under traffic control for the duration of the works, this hasn't been meaningfully assessed or addressed in the TMP.	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B**	Swept path assessment has been completed and identified truck and dog can simultaneous turn-in and turn-out, however, semi-trailers can't. The assessment shows a semi-trailer straddling the two lanes and not turning from the hatched median and allows some safe distance for a vehicle propped at the intersection. An upgrade is identified to mitigate this existing issue. For the early works phase refer **Appendix B** for swept path assessment and concept Traffic Guidance Scheme in **Appendix G-1** for the early works phase. 25m B-Double vehicles are not proposed to be used by the Project. Lidar surveys will be collected in Mid-November and sight line checks will be completed. Any issues for Elm Street to have sufficient time to react to slow moving traffic turning out of LMD.

A-4 State Assessment Referral Agency

Table 8–1: TMP addressed SARA review comments

Item No.	SARA Request	TMP Reference	Response
1	CTMP / TMP to be certified by an RPEQ (or suitably qualified expert) and be submitted in accordance with DTMP Guide to Traffic Impact Assessment.	Document Control	TMR managed and signed by David Edwards – TMR Traffic Management Designer (TMD), registration number 152 and RPEQ 07432
2	Confirm haulage routes.	Section 4.1	Vehicle access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway as outlined in the TMP. A secondary heavy vehicle route is required to/from Noosa for concrete deliveries. This will be via Stated Controlled Road including Cooroy – Noosa Road to Elm Street and north to Lake Macdonald Drive. No heavy vehicle access via the eastern route (Sivyers-Gumboil-Collwood Roads section) is permitted.
3	Conform the construction schedule and when haulage will occur on the State Controlled Road network, including identification of any times haulage will be restricted, for example when school zones are operational.	Section 3.4.1 and Section 5.3	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** for full details. Minimised heavy vehicle of six two-way flows during period noted as 7:20 - 8:45am and 2:30 - 3:45pm in Section 5.3.
4	Demonstrates how construction traffic is intended to be managed to minimise impacts on the state-controlled road network.	Section 3.4.1	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** for full details.
5	The specific actions that will avoid or mitigate and manage adverse traffic impacts should be identified.	Section 5	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** for full details.

A-5 Noosa Shire Council Comments Register

TMP addressed NSC review comments

Item No.	NSC Comments	TMP Reference	Response
1 (TMP P2)	Documents have not been signed, and there is no TMR Traffic Management Designer (TMD) registration number present. A TMP can only be produced by someone with their TMD accreditation in Queensland.	Document Control	TMR managed and signed by David Edwards – TMR Traffic Management Designer (TMD), registration number 152 and RPEQ 07432.
2 (TMP P10)	Indicates that light vehicle access via the eastern route but expected vehicle numbers have not been provided. The Coordinator Generals (CG) Evaluation Report highlights that vehicles will be required to use this route. Exact details on vehicle type and numbers should be considered and impact evaluated.	Section 3.4.1.2	Vehicle access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway as outlined in the TMP. A secondary heavy vehicle route is required to/from Noosa for concrete deliveries. This will be via Stated Controlled Road including Cooroy – Noosa Road to Elm Street and north to Lake Macdonald Drive. No heavy vehicle access via the eastern route (Sivyers-Gumboil-Collwood Roads section) is permitted.
3 (TMP P13)	There are many documents being referenced through the TMP, including Seqwater specification TS1300-7.08, it would be good to obtain copies of these documents to understand their requirements.	N/A	Seqwater to provide to NSC, if not done so already.
4 (TMP P14)	The TMP reference traffic data from The Coordinator Generals Impact Assessment Report – Chapter 9 – Traffic and Transport (January 2019). The CG Evaluation Report (May 2019) calls for another TIA to be undertaken. The most recent data/analysis should be used in the design of the TMP, another TIA has been undertaken in December 2020.	Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B**	An updated TIA has been completed as part of preparing this TMP.
5 (TMP P15)	Incorrect accreditation mentioned, TMR approved Traffic Management Contractor that has level 3 trained officers. TMD accreditation is required.	Document Control	TMR managed and signed by David Edwards – TMR Traffic Management Designer (TMD), registration number 152 and RPEQ 07432.
6 (TMP P27)	Note, all design plans will need to accommodate the turn manoeuvrability of a B-double	Section 5.2.1	B-Doubles are not proposed as part of the construction vehicles fleet for LMDIP.
7 (TMP P27)	Note, oversize/over mass deliveries with indivisible loads need to be considered in the development of plans.	Section 7.5	OSOM vehicles will be managed via necessary permits and approvals, as and when required.

Item No.	NSC Comments	TMP Reference	Response
8 (TMP P29) – (a)	That the Elm Street and Lake Macdonald intersection is not designed to accommodate HV movements. It is understood that HVs are currently utilising this intersection in its current format, however, this will not be acceptable once an HV is expected every 10 minutes. In addition, it is key to note that his is a school bus route.	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B**	An upgrade is identified to mitigate this existing issue. For the early works phase refer **Appendix B** for swept path assessment and concept Traffic Guidance Scheme in **Appendix G-1** for the early works phase.
9 (TMP P29) – (b)	Suggests HV approaching from the south on Elm Street, this has not been reviewed previously and contradicts Coordinators Generals reference route. This will likely cause major traffic issues at the Elm Street and Myall Street intersection, as the intersection is not designed to accommodate B-double movements.	Section 3.4.1.2	Vehicle access is restricted to the primary route on Lake Macdonald Drive, and north on Elm Street to Exit 237 on the Bruce Highway as outlined in the TMP. A secondary heavy vehicle route is required to/from Noosa for concrete deliveries. This will be via Stated Controlled Road including Cooroy – Noosa Road to Elm Street and north to Lake Macdonald Drive. Elm Street and Myall Street to the south will not be used by Project heavy vehicles.
10 (TMP P29) – (c)	Additionally, the document highlights the possibility of using Swift Drive (a residential street) as a contingency plan.	Section 3.4.1.2	Swift Drive is not permitted as a HV route.
11 (TMP P29) – (d)	Indicates a lack of planning and investigation surrounding this section of the plan.	N/A	Ensure of context as unable to find referenced document page. Nevertheless the TMP has been developed from scratch with associated assessment all use the latest information and data.
12 (TMP P30)	The number of truck movements per minutes is based on a 12-hour day, however the CG has indicated that haulage operations need to be minimised between 7am-9am and 2pm-4pm, creating an 8-hour delivery day. Additionally, it will be difficult for vehicles to arrive in scheduled intervals, HVs arriving in groups need to be considered in the design.	Section 3.4.1 and Section 5.3	Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** for full details. Minimised heavy vehicle of six two-way flows during period noted as 7:20 - 8:45am and 2:30 - 3:45pm in Section 5.3.

Item No.	NSC Comments	TMP Reference	Response
13 (TMP P32)	Minimising HV movements during certain times (school drop off) has been mentioned, however, there are no details on how this will be undertaken. An external truck marshalling area could be utilised.	Section 7.4.1	If required, a marshalling area has been identified on Elm Street prior to the Cooroy township.
14 (TMP P38)	Section 5.4.2 details as protocol for HV movement in/out of the Dam project, however, the process does not account for conflicts surrounding HV entering and leaving at the same time, where there is insufficient room at the intersection to permit this. Considering the high number of vehicle movements.	Section 5.2.1	An upgrade is identified to mitigate this existing issue. For the early works phase refer **Appendix B** for swept path assessment and concept Traffic Guidance Scheme in **Appendix G-1** for the early works phase.
15 (Sub Plan P4)	Scope of works indicates HV deliveries (below) resulting 1 HV movement every 5 minutes for a 2-month period. I feel these components (below) are part of the bulk haulage operation, not the earlier works. I feel no bulk haulage should commence until all outstanding items are completely resolved. As soon as the HV starts, we will start hearing from the residents, and we need to be able to provide them with details of the control which should be in place. - Delivery of sheet piles (20-foot containers) - Delivery of rock to site from quarries.	Section 3.4.1	Refer Early Work Management Plan and Six Mile Creek Dam Safety Upgrade Project Coordinator-General's change report - Early Works November 2024. Refer to Traffic Impact Assessment for LMDIP (November 2024) – Refer **Appendix B** for full details with the latest information and data of heavy vehicle movements.
16 (Sub Plan P6)	TGSs are mentioned but not provided. The one provided has not been signed off.	Section 5.1 and Appendix G	Concepts TGSs have been provided in Appendix G. The contractor will provide formal TGS documentation for approval by TMR and NSC. and signed by.
17 (Sub Plan P9)	Commencing sheet piling and some of the site establishment items are not early works. These works need to be reviewed further and ins and outs determined.	Section 3.2	Sheet piling is part of Stage 2 All early works are in accordance with the Early Work Management Plan and Six Mile Creek Dam Safety Upgrade Project Coordinator-General's change report - Early Works November 2024
18 (Sub Plan General)	The sub plan is lacking many specific details, including further details on a communication plan that is required. I think they need VMS on Lake Macdonald Drive to supply constant updates on the project.	Section 8.3	VMS not proposed for project updates. Refer associated Community Consultation and Engagement Plan. Refer to Stakeholder Management Plan (JH Document Number: 7225-JHG-MPL-CSM-001).
19 (Sub Plan General)	Need approval of civil plans of the associated works if we are looking towards any type of approval for pre-works.	N/A	Approval of civil plans are outside the TMP. They will be /are submitted in the appropriate period.

Appendix B

Traffic Impact Assessment (SMEC), November 2024

Appendix C

Road Safety Audit (SMEC), November 2024

Appendix D

Dilapidation Assessment (SMEC) June November 2024

Appendix E

Pavement Impact Assessment Extract (Dec 2020)

Appendix F

Noosa Shire Council Letter of No Objection

N

Appendix G

Traffic Guidance Scheme Concepts

G-1 Elm Street / Macdonald Drive Traffic Guidance Scheme Concept – Early Works Stage

G-2 Macdonald Drive Traffic Guidance Scheme Concept – Main Works

Appendix H

Stakeholder Liaison Meeting Minutes / Notes

H-1 Cooroy State School

H-2 Milestones Early Learning Centre

H-3 Transport and Main Roads (including Translink)

H-4 Noosa Shire Council

SMEC Brisbane

Level 6, 480 St Pauls Terrace
Fortitude Valley Qld 4006

PO Box 2211, Fortitude Valley QLD 4006

Phone: +61 7 3029 6600

Email: brisbane@smec.com

engineering positive change

SMEC simplifies the complex. We unlock the potential of our people to look at infrastructure differently, creating better outcomes for the future.

www.smec.com