The Northern Road Upgrade
Between Mersey Road and Eaton Road
November, 2018
### Site Details

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Plan reviewed by:

Adam Boyd  
Peter Sheehan  
Jeffrey Gilham  
Cameron Weller

GEJV  
Project Manager  
GEJV  
Environmental Manager  
Roads and Maritime  
Representative  
Environmental  
Representative

Revision history

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<tr>
<td>ADT</td>
<td>Average daily traffic</td>
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<tr>
<td>CCLP</td>
<td>Construction Community Liaison Plan</td>
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<td>CCS</td>
<td>Community Communication Strategy</td>
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<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
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<td>CMS</td>
<td>Complaints Management System</td>
</tr>
<tr>
<td>CoA</td>
<td>Condition of approval</td>
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<td>Compliance audit</td>
<td>Verification of how implementation is proceeding with respect to a CEMP (which incorporates the relevant approval conditions)</td>
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<tr>
<td>CRM</td>
<td>Community Relations Manager</td>
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<td>CSSI</td>
<td>Critical State Significant Infrastructure</td>
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<tr>
<td>CTMP</td>
<td>Construction Traffic Management Plan</td>
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<tr>
<td>DEOH</td>
<td>Defence Establishment Orchard Hills</td>
</tr>
<tr>
<td>DoEE</td>
<td>Commonwealth Department of the Environment and Energy</td>
</tr>
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<td>DP&amp;E</td>
<td>NSW Department of Planning and Environment</td>
</tr>
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<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
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<td>EMS</td>
<td>Environmental management system</td>
</tr>
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<td>Environmental aspect</td>
<td>Defined by AS/NZS ISO 14001:2015 as an element of an organisation’s activities, products or services that can interact with the environment</td>
</tr>
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<td>Environmental impact</td>
<td>Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s environmental aspects</td>
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<td>Environmental incident</td>
<td>An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment</td>
</tr>
<tr>
<td>Environmental objective</td>
<td>Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve</td>
</tr>
<tr>
<td>Environmental Representative (ER)</td>
<td>A suitably qualified and experienced person independent of project design and Construction personnel employed for the duration of Construction. The principal point of advice in relation to all questions and complaints concerning environmental performance</td>
</tr>
<tr>
<td>Environmental target</td>
<td>Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives</td>
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<tr>
<td>EPA</td>
<td>NSW Environment Protection Authority</td>
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<td>EP&amp;A Act</td>
<td><em>NSW Environmental Planning and Assessment Act 1979</em></td>
</tr>
<tr>
<td>EPBC Act</td>
<td><em>Commonwealth Environmental Protection and Biodiversity Conservation Act 1999</em></td>
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<tr>
<td>EPL</td>
<td>NSW Environment Protection Licence under the <em>Protection of the Environment Operations Act 1997</em></td>
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<td>ERG</td>
<td>Environmental Review Group</td>
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<td>Term</td>
<td>Expanded text</td>
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<td>------------------</td>
<td>-------------------------------------------------------------------------------</td>
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<td>EWMS</td>
<td>Environmental Work Method Statements</td>
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<tr>
<td>Federal-CoA</td>
<td>Condition of the Federal Department of the Environment and Energy Approval Decision</td>
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<tr>
<td>Hold Point</td>
<td>A point beyond which a work process must not proceed without express written authorisation from Roads and Maritime</td>
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<td>Non-compliance</td>
<td>Failure to comply with the requirements of the Project approval or any applicable licence, permit or legal requirements</td>
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<tr>
<td>Non-conformance</td>
<td>Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation</td>
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<td>NSW-CoA</td>
<td>Condition of the NSW DP&amp;E Infrastructure Approval</td>
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<td>NSW Infrastructure Approval</td>
<td>The Infrastructure Approval for the Northern Road Upgrade issued by the New South Wales Government on 30 May 2018</td>
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<td>OACEMP</td>
<td>Overarching Construction Environmental Management Plan</td>
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<td>OEH</td>
<td>NSW Office of Environment and Heritage</td>
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<td>PMP</td>
<td>Pedestrian Movement Plan</td>
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<td>Roads and Maritime</td>
<td>NSW Roads and Maritime Services</td>
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<td>Project, the</td>
<td>The Northern Road Upgrade between Mersey Road and Eaton Road</td>
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<tr>
<td>REMM</td>
<td>Revised Environmental Management Measure as provided in the Final EIS / SPIR</td>
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<td>Roads and Maritime, RMS</td>
<td>NSW Roads and Maritime Services</td>
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<td>ROL</td>
<td>Road Occupancy Licence</td>
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<td>RTA</td>
<td>Roads and Traffic Authority (former)</td>
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<td>SEARs</td>
<td>Secretary’s Environmental Assessment Requirements</td>
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<td>Secretary</td>
<td>Secretary of the NSW Department of Planning and Environment, or delegate</td>
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<td>SPIR</td>
<td>Submissions and Preferred Infrastructure Report</td>
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<td>SZA</td>
<td>Speed Zone Authorisation</td>
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<td>TCP</td>
<td>Traffic Control Plan</td>
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<td>TMC</td>
<td>Transport Management Centre</td>
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<td>TNR</td>
<td>The Northern Road</td>
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<td>TSP</td>
<td>Traffic Staging Plan</td>
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<td>VMP</td>
<td>Vehicle Movement Plan</td>
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<td>VMS</td>
<td>Variable Message Sign</td>
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<td>Variable Speed Limit Signs</td>
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<td>WHS</td>
<td>Work Health and Safety</td>
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1 INTRODUCTION

1.1 Context

This Construction Traffic Management sub-plan (CTMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Northern Road Upgrade between Mersey Road and Eaton Road (the Project). The Project is being delivered by Georgiou Ertech Joint Venture (GEJV).

An Overarching Construction Environmental Management Plan (OACEMP) has been prepared by Roads and Maritime to address the State and Federal conditions of approval (CoA) and environmental management measures listed in The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park NSW Environmental Impact Statement / Commonwealth Draft Environmental Impact Statement (EIS) as amended by The Northern Road Upgrade – Mersey Road, Bringelly to Glenmore Parkway, Glenmore Park Submissions and Preferred Infrastructure Report (SPIR), Roads and Maritime specifications and all applicable legislation.

This CTMP has been prepared by GEJV to address the mitigation and management measures outlined in the OACEMP, conditions of approval, Roads and Maritime QA specifications, and all relevant legislation. An overview of the Project is shown on Figure 1-1.

1.2 Background

The EIS assessed the potential traffic and transport impacts during the Construction of the Project.

As part of EIS development, a detailed traffic and transport assessment was prepared to address the Secretary’s Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning and Environment (DP&E) and the Commonwealth EIS Guidelines issued by the Federal Department of the Environment and Energy (DoEE). The traffic and transport assessment was included in the EIS as Annexure G.

Further consideration of traffic and transport impacts was undertaken subsequent to exhibition of the EIS. Consideration of the Project design refinements against the outcomes of the traffic and transport assessment carried out for the EIS was provided in Section 5.1.1 of the SPIR. Revised environmental management measures (REMMs) were provided within the SPIR. Where applicable, the REMMs from the SPIR have been included in this CTMP.
1.3 Environmental management system overview

The overall Environmental Management System (EMS) for the Project is described in Section 3.1 of the CEMP.

The CTMP forms part of GEJV environmental management framework for the Project, as described in Section 3.4 of the CEMP.

EWMS will be developed and signed off by environment and management representatives prior to associated works and Construction personnel will be required to undertake works in accordance with the identified mitigation and management measures.
The Northern Road Upgrade Between Mersey Road and Eaton Road
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Used together, the CEMP, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by GEJV personnel and subcontractors.

The review and document control processes for this CTMP are described in Sections 6.7 and 6.8 of the CEMP.

2 ONGOING CONSULTATION DURING CONSTRUCTION

Ongoing consultation between Roads and Maritime and GEJV, and stakeholders, the community and relevant agencies regarding the management of traffic and transport impacts will be undertaken during the Construction of the Project as required. The process for the consultation is documented in the Community Communication Strategy (CCS).

In accordance with NSW-CoA E41, unencumbered access to private property will be maintained during Construction unless otherwise agreed with the landowner in advance. A landowner's access that is physically affected by the Project will be reinstated to at least an equivalent standard, in consultation with the landowner and at no cost to the landowner.

During Construction of the Project, measures will be implemented to maintain pedestrian and vehicular access to, and parking in the vicinity of, businesses and affected properties, as required. Alternative pedestrian access, vehicular access, and parking arrangements, and signage to direct customers to these businesses and affected properties, will be developed by GEJV in consultation with affected businesses. These arrangements will be outlined in GEJV's TCPs, VMPs and/or PMPs and implemented prior to the disruption occurring. Signage and direction to businesses will be provided before, and for the duration of, any disruption during the Construction in accordance with NSW-CoA E58.

Consultation requirements under the EIS and SPIR for traffic and transport issues identified in the REMMs are listed in Table 2-1.

**TABLE 2-1: CONSULTATION REQUIREMENTS IDENTIFIED IN THE EIS AND SPIR**

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<th>REMM</th>
<th>Consultation requirements identified in the EIS and SPIR</th>
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<td>T-1</td>
<td>A Construction Traffic Management Plan (CTMP) has been developed, approved, implemented and monitored as part of the project. The TMP would:</td>
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<td>- Develop a communication plan to advise local residents and businesses of any changes to traffic conditions during Construction.</td>
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<td>- Consult with bus operators regarding temporary bus stop relocations during Construction and proposed bus stops during Operation.</td>
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<tr>
<td>T-4</td>
<td>Access to properties along affected roads would be maintained during Construction. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners.</td>
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<tr>
<td>SE-15</td>
<td>Where temporary changes to property access are required, alternate access should be determined in consultation with affected property owners and tenants.</td>
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<tr>
<td>CI-1</td>
<td>Consultation would be undertaken with local communities potentially affected by the impacts of multiple projects in addition to the project.</td>
</tr>
<tr>
<td>CI-2</td>
<td>Where relevant, consultation would be undertaken with proponents of other nearby developments to increase the overall awareness of project timeframes and impacts.</td>
</tr>
<tr>
<td>REMM</td>
<td>Consultation requirements identified in the EIS and SPIR</td>
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<tr>
<td>CI-3</td>
<td>Construction traffic management plans for this project should be developed in consultation with plans for other projects to assist in spreading the traffic load over the network and to minimise Construction traffic being concentrated on any one particular route.</td>
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</table>
3 PURPOSE AND OBJECTIVES

3.1 Purpose
The purpose of this CTMP is to describe how impacts on traffic and transport will be managed during Construction of this Project.

3.2 Objectives
The key objective of the CTMP is to ensure that traffic and transport impacts due to Construction of the Project are minimised. To achieve this objective, GEJV will:

- implement appropriate controls and procedures during Construction activities to address potential traffic impacts along the Project corridor
- minimise the overall impacts on road users
- maintain access for the local community, transport operators and businesses
- regularly inform road users and local communities in relation to changed traffic conditions or access
- Implement appropriate measures to address the requirements of the relevant mitigation measures from the OACEMP, the EIS, SPIR, conditions of approval and all relevant Roads and Maritime specifications implement appropriate measures to comply with all relevant legislation and other requirements as described in Section 4-1 of this CTMP.

3.3 Targets
Targets for the management of traffic and transport impacts during the Project are to:

- achieve full compliance with relevant legislative requirements and the conditions of approval
- ensure safe and continuous traffic movement for Construction workers and the general public
- maintain the capacity of existing roads where possible during Construction in order to minimise road user delays
- maintain continuity of access to local roads and properties
- undertake appropriate consultation with impacted residents and businesses and stakeholders
- implement traffic control operations to minimise delays to road users taking into consideration traffic volumes including peak times of the day and seasonal traffic
- avoid road occupancy where possible
- plan all Construction vehicle movements to minimise disruption to traffic flow on roads within the Project area and surrounds
- minimise impacts on, and complaints from, the community and stakeholders.
4 ENVIRONMENTAL REQUIREMENTS

4.1 Relevant legislation and guidelines

4.1.1 Legislation and regulatory requirements

Legislation relevant to traffic and transport includes:

- Roads Act 1993

Identified regulatory requirements include:

- approved and valid Road Occupancy Licences (ROL)
- approved relevant Speed Zone Authorisations (SZA)
- Australian Road Rules.

Relevant provisions of the above legislation are identified in the register of legal requirements included in Appendix A1 of the CEMP.

4.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this CTMP include:

- Roads and Maritime QA Specification G1 – Job Specific Requirements for The Northern Road Upgrade
- Roads and Maritime QA Specification G36 – Environmental Protection (Management System)
- Traffic Control at Worksites Manual (Roads and Traffic Authority (RTA), 2010)
- NSW Speed Zoning Guidelines (RTA, 2011)
- Guide: Signposting (RTA, 2007)
- NSW Bicycle Guidelines (RTA, 2005)
- Road Design Guide (Roads and Maritime, 2015)
- Technical Direction TDT 2013/06 Provision of Variable Message Signs on motorways for on-road presentation of real time travel time information (Roads and Maritime, 2013)
- Road Occupancy Manual (Transport Management Centre, 2015)
- Tourist Signposting guide (Roads and Maritime and Destination NSW, 2012)
- Guide to Road Design – Parts 1-7 (Austroads, 2009)
- Guide to Road Safety - Parts 1-9 (Austroads, 2009)
- Austroads Road Safety Audit Second Edition 2002: Checklist 5: Roadwork traffic scheme audit
• Austroads Traffic Engineering Practice – Part 14
• Australian Standard AS1742.3-2009 Traffic control devices for works on roads
• Australian Standard AS 4852.2-2009 Variable message signs
• Australian Standard AS1742 Parts 1 to 14, Manual of uniform traffic control devices

Roads and Maritime specifications are a key source of environmental protection management processes relevant to this CTMP. The specifications set out environmental protection requirements, including Hold Points, that must be complied with by GEJV during Construction of the Project. A Hold Point is a point beyond which GEJV will not proceed without express written authorisation from Roads and Maritime.
5 EXISTING CONDITIONS

5.1 Existing road network

The Northern Road provides a key north-south connection in south-western Sydney, stretching from Narellan, west of Campbelltown, via Penrith to Bligh Park south-east of Richmond. The road corridor intersects with a number of regional motorway, arterial and collector roads such as Richmond Road, Great Western Highway, M4 Motorway, Elizabeth Drive, Bringelly Road, and Camden Valley Way.

5.1.1 Regional road network

At a regional level, The Northern Road and Elizabeth Drive are the key north-south and east-west road traffic routes.

The Northern Road between Mersey Road, Bringelly and Glenmore Parkway, Glenmore Park generally comprises a two-lane rural road on a single carriageway. North of Glenmore Parkway, on approach to the M4 Western Motorway, The Northern Road widens to two lanes in each direction. The Northern Road speed limit is generally 80 km/h between Mersey Road and Glenmore Parkway, reducing to a limit of 60 km/h through Luddenham town centre.

Elizabeth Drive is a rural local road. It is a two-lane undivided carriageway with a speed limit of 80 km/h. Elizabeth Drive is 10 m wide with unsealed shoulders and intersects with The Northern Road at a roundabout.

5.1.2 Local road network

A number of local roads within the Project area connect with The Northern Road, including:

- Mersey Road - a rural road consisting of a two-lane undivided carriageway with no sign-posted speed limit
- Dwyer Road - a rural collector road with a two-lane undivided carriageway signposted at 80 km/h
- Eaton Road - a two-lane unsealed road with no sign-posted speed limit
- Adams Road - a rural collector road that consists of a two-lane undivided carriageway signposted at 70 km/h

5.1.3 Heavy vehicles and freight

The Northern Road provides a significant regional north-south freight route. The section of The Northern Road between Mersey Road and Glenmore Parkway allows B-doubles up to 26 m and vehicles 4.6 m high. Elizabeth Drive to the east of The Northern Road and Park Road to the west are also routes for B-doubles up to 26 m.

Heavy vehicles contribute 11-19% to daily traffic volumes along The Northern Road between Mersey Road and Glenmore Parkway, being generally higher to the north of Elizabeth Drive.

5.2 Crashes

There have been 121 crashes recorded in The Northern Road between Mersey Road and Glenmore Parkway over a five year period ending in 2014. In total, there were five crashes that resulted in fatalities, 57
Crashes that resulted in injuries and 59 crashes where no injuries were reported. The number of reported crashes has remained relatively consistent over the five year period.

The crash data indicates that the majority of crashes occurred during the day, with a cluster of crashes occurring during the afternoon peak from 3:00 pm – 6:00 pm. Rear-end collisions comprised the highest proportion of crashes.

5.3 Existing road network performance

5.3.1 Existing traffic volumes

Traffic surveys undertaken between November 2014 and July 2015 measured average daily traffic (ADT) along The Northern Road and the local road network. The ADT volumes are summarised in Table. The data indicates that on average, daily traffic volumes decrease from north to south along The Northern Road. Traffic volumes along Elizabeth Drive are similar to those along The Northern Road. Traffic volumes do not vary between the AM peak and PM peak.

<table>
<thead>
<tr>
<th>Road / location</th>
<th>Between</th>
<th>AM peak 1 hr (8:00 – 9:00am)</th>
<th>PM peak 1 hr (4:30 – 5:30pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Northern Road</td>
<td>Glenmore Parkway and Bradley Street</td>
<td>1,601</td>
<td>1,878</td>
</tr>
<tr>
<td></td>
<td>Chain-O-Ponds Rd and Kings Hill Road</td>
<td>1,285</td>
<td>1,563</td>
</tr>
<tr>
<td></td>
<td>Littlefields Rd and Elizabeth Drive</td>
<td>1,097</td>
<td>1,371</td>
</tr>
<tr>
<td></td>
<td>Elizabeth Drive and Park Road</td>
<td>1,096</td>
<td>1,397</td>
</tr>
<tr>
<td>Bradley Street</td>
<td>West of The Northern Road</td>
<td>534</td>
<td>541</td>
</tr>
<tr>
<td>DEOH Access</td>
<td>East of The Northern Road</td>
<td>168</td>
<td>66</td>
</tr>
<tr>
<td>Chain-O-Ponds Road</td>
<td>West of the Northern Road</td>
<td>27</td>
<td>16</td>
</tr>
<tr>
<td>Kings Hill Road</td>
<td>West of the Northern Road</td>
<td>219</td>
<td>186</td>
</tr>
<tr>
<td>Longview Road</td>
<td>East of the Northern Road</td>
<td>Not available</td>
<td>13</td>
</tr>
<tr>
<td>Gates Road</td>
<td>East of the Northern Road</td>
<td>Not available</td>
<td>19</td>
</tr>
<tr>
<td>Littlefields Road</td>
<td>West of the Northern Road</td>
<td>131</td>
<td>144</td>
</tr>
</tbody>
</table>
The Northern Road Upgrade - Between Mersey Road and Eaton Road

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

<table>
<thead>
<tr>
<th>Road / location</th>
<th>Between</th>
<th>ADT (vehicles/day)</th>
<th>AM peak 1 hr (8:00 – 9:00am)</th>
<th>PM peak 1 hr (4:30 – 5:30pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth Drive</td>
<td>East of the Northern Road</td>
<td>11,534</td>
<td>849</td>
<td>919</td>
</tr>
<tr>
<td>Park Road</td>
<td>West of the Northern Road</td>
<td>6,342</td>
<td>470</td>
<td>501</td>
</tr>
<tr>
<td>Adams Road</td>
<td>East of the Northern Road</td>
<td>Not available</td>
<td>134</td>
<td>161</td>
</tr>
<tr>
<td>Dwyer Road</td>
<td>South of the Northern Road</td>
<td>Not available</td>
<td>50</td>
<td>74</td>
</tr>
</tbody>
</table>

5.3.2 Capacity of the existing The Northern Road

Car travel time surveys along The Northern Road indicate that vehicles generally travel at speeds slower than the signposted speed limits. Delays at roundabouts, traffic turning right at priority intersections and delays caused by cars being unable to overtake heavy vehicles contribute to reduced travel speeds.

5.4 Public transport network

5.4.1 Bus

Public bus route number 789 is operated by the Busways Company in the Project area. This service operates as a peak hour only service, with services twice per day on weekdays and no services on weekends or public holidays.

Bus route number 789 provides transport between Penrith and Luddenham, with the majority of its route travelling along The Northern Road (outside of the Construction footprint). The existing bus stops and proposed locations for relocated and new bus stops are shown in Figure 4-1.

5.5 Pedestrian and cycling network

Pedestrian paths along The Northern Road within the Project area are limited to a short section of footpath on the western side of The Northern Road between Roots Avenue and the service station near Park Road at Luddenham.

There are no existing cycle paths within the Project area, as such cyclist use the existing roads. The Roads and Maritime Cycleway Finder classifies The Northern Road as a high difficulty on-road environment for cyclists.
FIGURE 5-1 - BUS ROUTE 789 AND BUS STOPS IN THE PROJECT AREA (SOUTHERN SECTION)
6 CONSTRUCTION TRAFFIC IMPACTS

6.1 Traffic Impacts

The majority of the new works is constructed on an alignment offset from the existing The Northern Road. The main impact of the Construction works will be minor loss of service level due to the implementation of traffic controls, in particular lowering of speed limits and occupancy of lanes as required, which will result in increased travel times.

To keep the road user delays to a minimum, the Project Team will plan and schedule works to minimise the duration of the works, number of ROL’s required, and avoid road occupancies during peak periods where possible and approved by the TMC.

Construction of the Project is expected to have minimal impact on the capacity of The Northern Road during Construction. There will be a temporary increase in traffic volumes during Construction as a result of commuting workers and management staff to sites, deliveries of equipment and the haulage of materials to and from the work sites.

Construction activities may result in the following impacts:

- increased travel times due to road works restrictions and reduced speed limits around Construction sites
- increased travel times due to increased truck and construction machinery movements
- increased travel times due to traffic diversions
- increased travel times due to temporary traffic calming measures
- temporary partial closure of roads and altered property access during Construction
- potential safety issues relating to increased heavy vehicle movements
- temporary changes to bus access arrangements, including stop relocation, resulting in increased walk distance for certain customers.

A preliminary estimate of Construction traffic movements associated with the Project results in the following estimates:

- 40 site management personnel working within the office may be required at the peak of Construction for each stage of the Project
- 230 employee light vehicle movements per day on average will be generated during peak Project Construction periods
- 100 heavy vehicle movements per day on average will be generated during peak Project Construction periods
- 62 light vehicle movements in peak hour (morning and afternoon) on average for any one worksite will be generated by Construction workers during peak Project Construction periods.

The increase in average daily traffic volumes due to the Project will be less than a 5% increase in traffic over the day. The impact on traffic on The Northern Road and Elizabeth Drive is expected to be minimal.
6.2 Construction routes

6.2.1 Hours of work

Generally, Construction work will be undertaken during standard Construction working hours:

- 7:00 am to 6:00 pm Monday to Friday
- 8:00 am to 1:00 pm Saturday
- at no time on Sunday or public holidays.

The Project may at some need to undertake work outside standard working hours in order to minimise disruption to traffic. These works may include, but are not limited to:

- establishment of traffic control signs or devices
- implementation of traffic switches
- works that are impractical to undertake during the day due to disruption to traffic
- utility works.

Out of hours works will meet the requirements of NSW-CoA E26. GEJV will implement management measures to minimise impacts to noise sensitive receivers and road users due to work outside standard working hours.

6.2.2 Ancillary facility access

The Project has one Ancillary Facility located at C8 as highlighted in Figure 6-1. The final type, location and number of ancillary facilities is in accordance with the Ancillary Facilities Management Plan, prepared as part of the GEJV CEMP.

The Northern Road will be the access point for the ancillary facility, however there will be requirement for the use of some local roads by construction and light vehicles for work associated with local road upgrades.
6.2.3 Local road use

Local roads in the Project area that will be accessed by both construction and light vehicles include:

- Liverpool City Council:
  - Eaton Road, Luddenham
  - Elizabeth Drive, Luddenham (LCC)
  - Dwyer Road, Bringelly
  - Vicar Park Lane, Luddenham.

No heavy vehicle access will be allowed on Willowdene Avenue. Light vehicle access only will also be required for local roads around Luddenham town centre.

Table 5-1 provides details of the local roads to be used for Construction of the Project, including the type of access and justification as to why use of the road is required. The use of the local roads identified in Table 5-1 for Construction of the Project has been identified in accordance with the requirements of NSW-CoA E54. These roads were identified and assessed in the EIS.

<table>
<thead>
<tr>
<th>Local road</th>
<th>Access required</th>
<th>Justification for use and why there are no alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eaton Road, Luddenham</td>
<td>• Construction (heavy and light) vehicle access</td>
<td>• Access required to complete local road upgrade and tie-in under approved project scope</td>
</tr>
<tr>
<td></td>
<td>• Not a haulage route beyond the limit of works</td>
<td>• Early access to the Stage 4 site compound until other temporary traffic control is constructed as outlined in the Ancillary Facility Management Plan</td>
</tr>
<tr>
<td>Vicar Park Lane, Luddenham</td>
<td>• Construction (heavy and light) vehicle access</td>
<td>• To complete the close of access to the Project boundary</td>
</tr>
<tr>
<td></td>
<td>• Not a haulage route beyond the limit of works</td>
<td></td>
</tr>
<tr>
<td>Dwyer Road, Bringelly</td>
<td>• Construction (heavy and light) vehicle access</td>
<td>• Access required to complete local road upgrade and tie-in under approved project scope</td>
</tr>
<tr>
<td></td>
<td>• Not a haulage route beyond the limit of works</td>
<td></td>
</tr>
<tr>
<td>Willowdene Avenue, Luddenham</td>
<td>• Light vehicles only</td>
<td>• Early access required to the alignment until the main alignment is fenced and creek crossings constructed</td>
</tr>
</tbody>
</table>

Traffic movements to and from the ancillary facility are expected to have limited or minor impacts to the local road network, with the overall increase in average daily traffic volumes due to the Project expected to be less
than 5%. Light vehicle movements will comprise the majority of the Construction traffic movements for ancillary sites.

Local Roads will not be included in any Traffic Management Plans for State Road traffic detours.

All other access routes for ancillary facilities located on greenfield sites adjacent to new sections of road to be constructed will be through the work sites at those locations.

6.2.4  Haulage routes

Heavy vehicle movements to and from and within (where applicable) the site will be via The Northern Road and the M4 Western Motorway, as well as via Elizabeth Drive and the M7 Motorway. Heavy vehicle routes for the Project that were identified and assessed in the EIS are shown on Figure 6-1. The use of local roads by heavy vehicles will be limited to those local roads identified in Section 6.2.3.

Where a change to the heavy vehicle routes identified in Figure 6-1 is justified on the basis that there is no other reasonable or feasible alternative, GEJV will consult with Liverpool City Council to determine the potential impacts associated with the proposed change and any additional controls required. GEJV will prepare a Consistency Assessment to ensure that the proposed modification to heavy vehicle routes is consistent with the approved Project, and meets the requirements of the EIS, as amended by the SPIR. Minimum criteria to be met by GEJV where an alternative heavy vehicle route is identified is provided in Section 6.1.2 The Consistency Assessment will be reviewed by the Roads and Maritime Project Manager and Environmental Manager (or delegate) and endorsed by the ER.
FIGURE 6-1  ANCILLARY FACILITY LOCATION AND HEAVY VEHICLE ROUTES FOR THE PROJECT
6.3 Road safety
Construction activity along The Northern Road is likely to have the following impacts on road safety:
- increased risk of loss of traction or control on temporary pavement surfaces
- increased risk of conflicts between cars, trucks and Construction vehicles
- reduced lane widths and increased proximity to barriers increasing risk of collisions
- increased risk of driver distraction around Construction activities
- decreased visibility of temporary line marking and other traffic control measures
- increased risk of collision at Construction site egress points.

6.4 Pedestrian and cyclist access
Construction of the Project may affect pedestrian and cyclists, who may be required use temporary alternative paths where sections of The Northern Road are inaccessible. Due to the staged approach of the Project and most of the Project being constructed in a greenfield area, the Project expects to have minimal impact on pedestrians and cyclists.

6.5 Property access
Access to properties will be maintained during Construction at all times, unless otherwise agreed with property owners and businesses, to limit the duration of any impacts.

6.6 Parking
Parking for Construction personnel will be provided at ancillary facilities. No impact on surrounding public parking areas is expected due to the Project.

6.7 Emergency services
Construction of the Project has the potential to cause delays to response times for emergency services. Delays due to Construction activities, queuing traffic and reduced speed limits may disrupt emergency services. Procedures to minimise the impacts to emergency services during Construction are incorporated into this CTMP.

6.8 Cumulative construction traffic
Potential cumulative construction impacts may occur from the aggregated effect of other developments preparing for or starting Construction, including cumulative traffic disruptions to road users travelling along The Northern Road and connecting local roads within the Project area. Projects that may contribute to cumulative traffic impacts due to location, timeframe and project size include:
- The Northern Road upgrade between Glenmore Parkway and Jamison Road
- M4 Smart Motorway civil work
- Bringelly Road upgrade Stage 1 and 2.
Traffic generated by additional heavy vehicle and light vehicles during the construction of these projects will result in higher than normal car and truck movements on The Northern Road and Elizabeth Drive.
7 SITE CONDITIONS

7.1 General

The Project Team has developed the Construction staging drawings including a Vehicle Movement Plan (VMP) and Traffic Staging Plans (TSPs) to primarily provide a safe environment for road users, Project employees and other stakeholders, and to minimise the impact of levels of service to road users, and maintain access for the local property owners.

The Project Team will monitor, review and amend as necessary the plans (Staging and VMP) as the Project develops throughout Construction.

7.2 Construction Activity

The proposed activities to be conducted by GEJV during the Construction phase of the Project will affect the existing The Northern Road, Eaton Road East, Eaton Road West and Dwyer Road. The specific details of the Construction activities, identified road network impacts and program will be detailed within the Traffic Staging Plans.

A number of gate access points will be required to be created. Gates will be required at the southern tie-in at The Northern Road, the northern tie-in at The Northern Road and at the northern tie-in at The Northern Road in its final design location, and at the site compound. The locations of gates will be coordinated and contained within the Construction staging plan and the associated vehicle movement plans with the Mass Haul Diagram and the Earthworks Plan which are submitted to Roads and Maritime in accordance with R44 contract specifications.

The main Construction activities currently identified which interface with the existing The Northern Road include:

- Installation of Traffic Measures including but not limited to installation of Safety Barriers, installation of signage and line marking.
- Deliveries of Plant including Oversized Plant to the site.
- Repairs and maintenance to the existing The Northern Road including the shoulders.
- Environmental maintenance to the road such as road sweeping.
- Deliveries of the materials to the site including but not limited to fill, quarry materials, precast concrete elements, drainage materials, concrete and asphalt.
- Traffic Management during traffic staging and switching.

Traffic Staging Plans will be developed to minimise impact on traffic on The Northern Road.

8 ENVIRONMENTAL MITIGATION AND MANAGEMENT MEASURES

A range of environmental requirements and management measures are identified in the EIS and SPIR, the conditions of approval and relevant Roads and Maritime documents. Specific measures and requirements to address traffic and transport impacts are provided in Table.
# TABLE 7-1 - TRAFFIC AND TRANSPORT REVISED ENVIRONMENTAL MANAGEMENT MEASURES

<table>
<thead>
<tr>
<th>ID</th>
<th>Measure / requirement</th>
<th>When to implement</th>
<th>Responsibility</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Construction impacts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-1</td>
<td>A Construction Traffic Management Plan (CTMP) would be developed, approved, implemented and monitored as part of the project. The TMP would:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Outline the general principles and procedures for the development of specific construction traffic control plan (TCPs), taking into consideration where possible other construction works utilising similar haulage and access routes</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>GEJV CTMP</td>
</tr>
<tr>
<td></td>
<td>• Ensure safe and continuous traffic movement for construction workers and the general public</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 9.2, TCPs</td>
</tr>
<tr>
<td></td>
<td>• Maintain the capacity of existing roads where possible</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 8.2, 8.5 and VMP</td>
</tr>
<tr>
<td></td>
<td>• Identify the requirements for temporary speed restrictions where traffic may pose a safety risk to workers</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 8.6</td>
</tr>
<tr>
<td></td>
<td>• Maintain continuity of access to local roads and properties, particularly along the existing alignment of The Northern Road (may require temporary u-turn facilities). Where access is affected, Roads and Maritime would consult with residents for alternative access arrangements</td>
<td>Construction</td>
<td>GEJV Traffic Manager / GEJV CLM</td>
<td>Section 8.13</td>
</tr>
<tr>
<td></td>
<td>• Details of access to construction sites including measures to prevent construction vehicles queuing on public roads</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 8.4</td>
</tr>
<tr>
<td></td>
<td>• Provide temporary traffic control where necessary</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 8</td>
</tr>
</tbody>
</table>
## Construction Traffic Management Plan

The Northern Road Upgrade - Between Mersey Road and Eaton Road

<table>
<thead>
<tr>
<th>ID</th>
<th>Measure / requirement</th>
<th>When to implement</th>
<th>Responsibility</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Provide appropriate warning and signage for traffic in the vicinity of work areas</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Sections 8.3 and 10</td>
</tr>
<tr>
<td></td>
<td>• Include methods to minimise road user delays such as undertaking works around live traffic including tie-in and bridge work outside of peak periods</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 8.9</td>
</tr>
<tr>
<td></td>
<td>• Undertake Construction activities off-line where possible to minimise the requirement to operate temporary traffic control and reduced speed zones</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 8.5</td>
</tr>
<tr>
<td></td>
<td>• Develop a communication plan to advise local residents and businesses of any changes to traffic conditions during Construction</td>
<td>Pre-Construction/ Construction</td>
<td>GEJV Traffic Manager / GEJV CLM</td>
<td>Section 12, CCS, CCLP</td>
</tr>
<tr>
<td></td>
<td>• Consult with bus operators regarding temporary bus stop relocations during Construction and proposed bus stops during operation.</td>
<td>Pre-Construction/ Construction</td>
<td>GEJV Traffic Manager / GEJV CRM</td>
<td>Section 8.11, CCS, CCLP</td>
</tr>
<tr>
<td></td>
<td>• Ensure the use of local roads by heavy vehicles to access temporary ancillary facilities would be limited as far as is reasonably practicable.</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 6.2</td>
</tr>
</tbody>
</table>

### Construction Staging

| T-2 | Staging plans to be prepared in consultation with adjoining contractors and for each stage of the upgrade. | Pre-Construction/ Construction | GEJV Construction Manager / GEJV Traffic Manager | Section 8.9, GEJV’s Traffic Staging Plans |

### Road Damage

| T-3 | Undertake a Pre-Construction dilapidation survey of local roads used for Construction. Defects caused by Construction activities would be rectified prior to completion of Construction | Pre-Construction | GEJV Construction Manager | Section 8.15 |
## Property access

<table>
<thead>
<tr>
<th>ID</th>
<th>Measure / requirement</th>
<th>When to implement</th>
<th>Responsibility</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-4</td>
<td>Access to properties along affected roads would be maintained during Construction. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners</td>
<td>Construction</td>
<td>GEJV Traffic Manager / GEJV CLM</td>
<td>Section 8.13</td>
</tr>
</tbody>
</table>

## Construction noise impacts

<table>
<thead>
<tr>
<th>ID</th>
<th>Measure / requirement</th>
<th>When to implement</th>
<th>Responsibility</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNI-2</td>
<td>Viable mitigation measures that would be expected to be deployed by the Construction Contractor once the final Construction sequencing and scheduling is known include:</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Annexure B3 GEJV CNVMP</td>
</tr>
<tr>
<td></td>
<td>- Restricting heavy vehicle movements, heavy deliveries and loading and unloading processes to daytime periods and to areas well away from receivers</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 5.1.3</td>
</tr>
<tr>
<td></td>
<td>- Haulage routes will be located as far away as possible from residential receivers, where this is reasonable and feasible</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Annexure B3 GEJV CNVMP</td>
</tr>
<tr>
<td></td>
<td>- Loading and unloading will be carried out away from sensitive receivers, where practicable</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Section 8.8.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Annexure B3 GEJV CNVMP</td>
<td></td>
</tr>
</tbody>
</table>

## Business and economic activity

<table>
<thead>
<tr>
<th>ID</th>
<th>Measure / requirement</th>
<th>When to implement</th>
<th>Responsibility</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE-12</td>
<td>Access to existing businesses would be provided on a continuous basis throughout the Construction of the project.</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>Sections 8.3</td>
</tr>
</tbody>
</table>

## Access and connectivity
## CONSTRUCTION TRAFFIC MANAGEMENT PLAN

The Northern Road Upgrade - Between Mersey Road and Eaton Road

<table>
<thead>
<tr>
<th>ID</th>
<th>Measure / requirement</th>
<th>When to implement</th>
<th>Responsibility</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE-14</td>
<td>The CTMP would include a signage strategy (consistent with Roads and Maritime policy) to provide guidance to passing patrons on access to shops, services and businesses during Construction.</td>
<td>Construction</td>
<td>GEJV Traffic Manager</td>
<td>GEJV’ Signage Strategies (in TCP)</td>
</tr>
<tr>
<td>SE-15</td>
<td>Access to properties would be provided on a continuous basis throughout the Construction of the Project. Where temporary changes to property access are required, alternate access should be determined in consultation with affected property owners and tenants.</td>
<td>Construction</td>
<td>GEJV Traffic Manager / GEJV CLM</td>
<td>Sections 8.13</td>
</tr>
<tr>
<td>SE-16</td>
<td>Access for pedestrians and cyclists near Construction works would be maintained, including consideration of pedestrian access needs for elderly people, children and people with disability.</td>
<td>Construction</td>
<td>GEJV Traffic Manager / GEJV CLM</td>
<td>Section 8.12&lt;br&gt;GEJV’ Pedestrian Movement Plans</td>
</tr>
</tbody>
</table>

### Cumulative impacts

| CI-1 | Consultation would be undertaken with local communities potentially affected by the impacts of multiple projects in addition to the project. | Construction       | Roads and Maritime Community and Stakeholder Advisor / GEJV CLM | Section 11.1 |
| CI-2 | Where relevant, consultation would be undertaken with proponents of other nearby developments to increase the overall awareness of project timeframes and impacts. | Construction       | GEJV Traffic Manager / GEJV Construction Manager          | Section 11.1 |
| CI-3 | Construction traffic management plans for this project should be developed in consultation with plans for other projects to assist in spreading the traffic load over the network and to minimise construction traffic being concentrated on any one particular route. | Construction       | GEJV Traffic Manager / GEJV Construction Manager / Roads and Maritime Project Manager | Section 8.1 |
8.1 Isolation of Work Areas

The Project Team will maximise the safety for road users and workers by isolating the active work areas from live traffic. This will be achieved by either providing sufficient clearance between the work areas and adjacent travel lanes, or through the provision of temporary safety barriers. The Project Team will apply the requirements of the following documents to implement:

- Traffic Control at Worksites Technical Manual July 2018
- AS1742 - Manual of uniform traffic control devices

8.2 Road User Delay Minimisation

The reliable and efficient operation of The Northern Road is vital Roads and Maritime and the people living and working in this area. GEJV acknowledge that maintaining the capacity of The Northern Road and minimising the delays experienced by road users during the Construction period is important.

The Project Team will focus on: minimising the impacts of each work site, maximising performance of The Northern Road, maintaining adequate access, and coordinating works with the Roads and Maritime Traffic Management Centre as required under the ROL conditions to ensure road users do not encounter several significant delays in travel times.

Vehicle movements will be planned to ensure that where possible there is no reduction in the traffic capacity of The Northern Road and all roads adjacent to the Project area. In consultation with Roads and Maritime a Vehicle Movement Plan (VMP) has been developed, However the VMP is a live document and will be revised as required throughout the Construction phase. When the VMP are updated they will be provided to Roads and Maritime for review/ approval. All VMPs will be stored on the GEJV document management system under the existing Project number and new updated document will be saved as new versions.

Through traffic on either existing roads or detour routes will be maintained where possible during Construction activities to minimise the impact on traffic flows on The Northern Road and other public roads. Construction deliveries will be timed to occur outside peak traffic periods where possible, to minimise impacts on the road network.

GEJV will monitor traffic movements and modify Construction activities and/or traffic control arrangements in the event that delays or congestion occurs as a result of the traffic control arrangements in place.

VMPs will be planned in consideration of the location of sensitive receivers, with provision for sufficient vehicle parking and turning areas to ensure there is no queueing of vehicles with idling engines outside of standard hours. Construction site personnel will be trained on start-up and shut down processes for Construction vehicles and plant to minimise noise impacts on sensitive receivers.

Traffic queues caused by road occupancies or Construction activities, measured visually along a single lane in any direction along The Northern Road or any local road will not exceed 200 m in length. If traffic queues reach this limit, the responsible traffic controller will be required to remove the cause of the delay until the flow of traffic returns to free flow conditions. The GEJV Traffic Manager will monitor, measure and record traffic queue lengths. The results of the queue length monitoring will be included in the weekly reports submitted to the Roads and Maritime Project Manager in accordance with Specification G10.

8.3 Signposting and delineation

Disruption to local businesses due to Construction will be minimised by providing signage to direct road users and the community to local businesses, tourist and other services and Council and community facilities in the Project area or areas affected by the Project. Where motorist, pedestrian or cyclist access to businesses or other properties is restricted due to Construction activities, signage will be implemented in
The Northern Road Upgrade Between Mersey Road and Eaton Road

consultation with affected businesses and property owners in accordance with NSW-CoA E57 and the approved CCS for the Project.

GEJV will make all arrangements with all affected business owners or persons in relation to the impacts and consequences of disruption due to Construction activities, prior to any disruption occurring. GEJV will involve affected business and property owners in close proximity to the Project in the design and planning of Construction activities and provide adequate notification and consultation to ensure appropriate signage and access requirements. Prior to any anticipated disruption due to Construction, GEJV’s Community Liaison Manager (CLM) will conduct face-to-face meetings with affected businesses and properties to determine a satisfactory alternate signposted route or entry point. Where appropriate, regular meetings with affected businesses will be scheduled to discuss requirements for access and signage prior to Construction commencing. Businesses in the Project area that have been identified as requiring such consultation are outlined in the approved CCS and GEJV Construction Community Liaison Plan (CCLP) and include Leppington Pastoral Company and businesses at Luddenham Town Centre.

Temporary way-finding signage to guide motorists, pedestrians or cyclist seeking businesses or other properties that are affected by Construction will be installed prior to disruption caused by changes to the road network or traffic systems. Any temporary signage provided will have no adverse impacts on access to the business or property, and entry points will be maintained as close as possible to existing entry points. Signage will be developed in consultation with affected businesses and properties and consistent with the Guide: Signposting (RTA, 2007) and Tourist Signposting Guide (Roads and Maritime and Destination NSW, 2012). The Contractors will undertake regular inspections of way-finding signage to ensure its effectiveness.

The details of controls for maintaining access will be provided as part of the TCPs, which will include a Signage Strategy that identifies the types and locations for signage that will be implemented. The Signage Strategy will be developed in consultation with affected local businesses and properties, Liverpool City Council, and other relevant authorities. The Signage Strategy will be developed in accordance with Guide: Signposting (RTA, 2007) and Tourist Signposting Guide (Roads and Maritime and Destination NSW, 2012) to outline the measures to be implemented to minimise disruption and access to businesses and properties in the Project area due to Construction. The Signage Strategy will include:

- a review of existing signage along the Project corridor, which may include:
  - private and commercial signage
  - street signage
  - visitor information signage
  - tourist directional signage
  - parking, pedestrian and public transport facilities signage
- the principles to be adopted for the signage strategy, such as:
  - principles for signage design – ensuring signs are highly visible, clear and easy to understand, of appropriate size and style
  - principles for signage placement – positioned in accordance with relevant Australian Standards, clearly legible to motorists, pedestrians and cyclists and without causing an obstruction, positioned at eye level for motorists, minimising clutter in the roadway
- the implementation program for the strategy, which will detail the methods and timing for following steps:
  - audit of existing signage
- consultation with stakeholders
- identification of locations where signage will be required
- liaise with local businesses, properties, the relevant local Council and Roads and Maritime to design and arrange signage
- removal of existing signage, if required
- installation of signage, which will occur progressively in consultation with affected stakeholders and prior to any disruption from Construction

- a monitoring and maintenance program for signage to ensure signs are effective and remain fit for purpose, including:
  - development and maintenance of a database of installed signage, including sign location, type and installation date
  - audit program of signage installed to assess its effectiveness, including consultation with affected business and property owners
  - inspections as part of the weekly environmental inspections to check for damage or removal of signage installed
  - a process for cleaning or replacement of signage as soon as feasibly practicable where vandalism, damage or removal occurs.

All of the requirements of the Signage Strategy will be addressed in the CTMP and relevant staging plans and TCPs. These will be updated as required and communicated accordingly.

During Construction, GEJV will maintain ongoing timely communication with affected businesses and properties on Project timing, changes to traffic conditions and access arrangements. This will include notice on timing and duration of activities and potential localised impacts. Information will be provided to, and sought from, affected business and property owners via various methods, including letterbox drops, face-to-face meetings, community information events and meetings, and the Project website. Further details are provided in the CCS and GEJV CCLP.

8.4 Construction Access Points

The Project Team has developed the Construction staging drawings including Vehicle Movement Plan (VMP) and Traffic Staging Plans (TSP’s) to primarily provide a safe environment for road users, Project employees and other stakeholders, and to minimise the impact of levels of service to road users, and maintain access for the local property and business owners.

The Project Team will monitor and review Construction access points from The Northern Road at the north and south tie-in areas to facilitate Construction activities. A possible Construction access point is contemplated at the Airport Service Entry as the work stages progress. Although the traffic volumes utilising these access points will be relatively low, the volumes will still be a significant change in turning movements along this section of The Northern Road.

The Project Team will ensure the access points have safe intersection sight distance, are designed to accommodate the turning movements of the largest heavy vehicle, and are constructed of a suitable all weather surfaces with appropriate drainage. The access points will also be speed restricted.
Further, temporary traffic controls will be implemented to facilitate access for haulage operations and over dimension site deliveries as required.

All access points will have a unique identification number that will be sign posted on the approach, and at the access point.

The two access points at either end of the Project have been designed in a roundabout configuration. The benefit of this design are:

- Minimal impact to traffic flows
- Removal of queued Construction vehicles (avoid the need for turning lanes and queues)
- Minimise noise and emissions
- Providing dedicated offline access to the Construction and ancillary facilities and parking
- Construction vehicles arriving at the Project site and Construction compounds outside the standard Construction hours described in NSW CoA E23 must not queue with idling engines.

8.4.1 Work Site Delineation

Traffic barriers and end treatment shall be used for the protection to workers and road users during Construction. Required traffic barriers and end treatment shall be nominated within the TSP / TCP including location and type.

Traffic barrier types and end treatment shall be selected for the speed zone environment, taking into consideration the working space available, deflection under impact and no-go zone available. The no-go zone shall be increased as much as practical or where the work space is of limited width, low deflection high containment barriers shall be selected.

Lane closures shall be by the use of bollards, cones, and barrier boards as required.

Temporary adjustments to lanes, road shoulders or traffic detours will be designed in accordance with Roads and Maritime specifications and guidelines and the Traffic Control at Worksites Manual (RTA, 2010) by a suitably qualified designer who is experienced in the design of roads to Roads and Maritime standards.

8.5 Road occupancy

8.5.1 Road Occupancy Licence

Construction of the Project may require closing of shoulders and lanes on either the existing, temporary or new pavements of The Northern Road or connecting local roads. A ROL will be obtained by GEJV if an existing road is to be used in such a way that it affects traffic flow within the vicinity of the Project works. Road occupancies include:

- shoulder occupancies and/or closures
- lane occupancies and/or closures
- any occupation of the Construction site by site personnel (including sub-contractors), equipment or plant that requires a traffic control plan
- any other event, including utility works, that causes delays to traffic flows.
CONSTRUCTION TRAFFIC MANAGEMENT PLAN

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Road occupancies involving closure of any shoulder or auxiliary lane will provide a minimum of one travel lane in each direction at all times during the road occupancy.

Applications for ROL will be prepared by GEJV in accordance with the Road Occupancy Manual (TMC, 2015) and will comply with the road safety and traffic management principles, objectives and targets outlined in this CTMP. Applications will be submitted to the TMC at least 10 working days before the planned commencement of the work activity that requires road occupancy. The submission will include a description of the work to be conducted, design drawings if relevant, a program of the works, a TCP, vehicle management plan, details of SZA submission (if applicable), and contact details of the Contractor Traffic Manager or delegate. The TCP associated with the ROL will be submitted to Roads and Maritime for approval at least 10 working days prior to commencement of the ROL.

GEJV will develop a travel time monitoring program to measure compliance with the ROL. Reporting on compliance with ROLs will be included in the weekly reports prepared for the Roads and Maritime Project Manager.

The GEJV Traffic Manager or delegate will advise the TMC on 1300 725 886 when closing and reopening traffic lanes, quoting the relevant ROL number. Copies of approved ROLs will be retained at the location of the relevant road occupancy and on-site.

GEJV will provide the Roads and Maritime Project Manager with a weekly forecast of the proposed road occupancies for the following week. In preparing forecasts for ROLs, the Contractors will liaise with other contractors undertaking adjacent concurrent works which may involve road occupancies in order to minimise cumulative impacts associated with multiple road/shoulder closures. This includes, but is not limited to, the following projects concurrently under construction:

- Bringelly Road Upgrade Stage 2- King Street to The Northern Road
- The Northern Road Upgrade Stages 2 and 6
- adjacent property and land developers.

8.5.2 Periods for implementation of road occupancies

Road occupancy will not be implemented for single lane closures in two-lane carriageway during the following time periods:

- 5.00 am to 10.00 am Monday to Friday (except public holidays)
- 2:30 pm to 8.00 pm Monday to Friday (except public holidays)
- 1.00 pm to 7.00 pm Saturday (except public holidays)
- 9.00 am to 7.00 pm Sunday (except public holidays)
- from 6.00 am on the day prior to a declared public holiday until 6.00 pm on the day following the public holiday
- the last weekday before and the first weekday after NSW Public School Holidays

Road occupancy will not be implemented for full carriageway closure (in a single direction or both directions) at any time.
8.6 Speed Zones

Temporary roadwork speed zones are one of the many traffic controls that can be implemented to manage the speed of traffic approaching and passing through a work site.

When considering the use of a roadwork speed zone, the Project Team will adopt Roads and Maritime’s speed zone principles as stipulated in Section 8.2 of TCWS manual and the NSW Speed Zoning Guidelines (RTA, 2011). The Project Team will apply speed zones as follows:

- Only be used where they are self-enforcing or will be enforced.
- Not be used alone, but with other traffic control signs and devices.
- Not be used in place of more effective traffic controls.
- Only be used while road occupancy is in progress, or changed traffic conditions or lower standard road conditions exist.

GEJV will maintain the signposted speed regime along The Northern Road, except where an approved ROL is in place. Speed restrictions of 60 km/h during ROL periods will be imposed where Construction works are being carried out directly adjacent to the traffic lanes. Temporary speed restrictions to 40 km/hr may be permitted for short periods during ROL periods wherever temporary traffic conditions require speed reduction for safety.

Speed zones will be included within the TSP’s and TCP’s, and the Project Team will prepare a speed zone application with the ROL applications and submit it to the Transport Management Centre for approval prior to the commencement of work. The requirements for signage shall be detailed within the nominated TCP.

Once approved, a copy of the Speed Zoning Authorisation will be forwarded to the local NSW Police Highway Patrol Office, and if necessary to Liverpool City Council. The Project Team accepts that it will be responsible for the management of records associated with the speed zone, in accordance with Section 8.2.6 of the Roads and Maritime’s TCWS Manual.

Temporary speed zoning changes shall be recorded for operational times of speed zone controls. The community will be informed of any SZA to be implemented via advertising and signage.

8.7 Traffic Controllers

GEJV will engage the services of a qualified Traffic Controller Subcontractor to provide traffic control services on the Project.

Traffic controllers will be trained and inducted in accordance with the requirements of the Project OHS&R Plan and the Project Training Plan and will comply with the requirements of the Traffic Control at Worksite Manual.

Personnel in traffic control roles must have attended and be qualified in the traffic control training courses relevant to their roles, as follows:

<table>
<thead>
<tr>
<th>Traffic Control Roles</th>
<th>RTA Traffic Control Training Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control traffic using “Stop/Slow” bat</td>
<td>Traffic Controllers (Blue Card)</td>
</tr>
<tr>
<td>Set up and work with Traffic Control Plans drawn up by others</td>
<td>Apply Traffic Control Plans (Yellow Card)</td>
</tr>
<tr>
<td>Select and make minor modifications to standard RTA Traffic Control Plans to suit work locations</td>
<td>Select/Modify Traffic Control Plans (Red Card)</td>
</tr>
</tbody>
</table>
Design new Traffic Control Plans and inspect setting out of traffic controls at work sites  
Design and Inspect Traffic Control Plans (Orange Card)

GEJV will ensure personnel responsible for implementing TCPs and traffic controllers have performed the relevant level of training and obtained a licence as required by the relevant jurisdiction by checking their relevant tickets and licenses during the induction process. The traffic controllers will be included in the GEJV Training and Competency register and their training and license records will be kept on induction files.

Prior to the commencement of any work on the Site involving controlling and directing traffic, a Hold Point under G10 will be submitted to Roads and Maritime including the names of the proposed Traffic Controllers, and the registration numbers and expiry dates of their Cards.

8.8 Project Site Compounds

GEJV will construct one main site compound on the North Eastern side of Eaton Road on the land nominated by Roads and Maritime. Access to the site ancillary facility will be provided in the form off of a dedicated access road from the new roundabout constructed on existing The northern Road (this roundabout also provides access to the site and ancillary facility). The site compound will be utilised for the site offices and facilities however may also be utilised for stockpiling/processing area for materials including fill, and . Traffic in and around the GEJV compound will be managed by the implementation of the following control measures:

- Posted speed limit within the compound will be 10 KM/H for light vehicles.
- Mandatory reverse parking for light vehicles.
- Material lay down, work areas, and re-fuelling areas require full PPE.
- All light vehicles and pedestrians to give way to heavy vehicles/plant.
- Light vehicles to call up on UHF radio when entering or exiting heavy vehicle/plant areas
- 

8.8.1 Haulage routes.

GEJV has undertaken detailed plan of haulage routes and vehicle turning movements during preparation of the CTMP. Figure 6-1 highlights the haulage routes and use of existing road network inclusive of The Northern Road and Elizabeth Drive.

GEJV has assessed and highlighted that vehicle and plant movements, including turning areas, will be within the limit of the works and will be identified in the TCPs. Restrictions on the use of local roads by Construction vehicles are detailed in Section 6.2.3 of this CTMP. Access to the ancillary facility will occur off Eaton Road in the early stages and off The Northern Road when the Roundabout is set up. Regular toolbox talks will be conducted to ensure that all Project personnel are aware of haulage routes and vehicle movement flows for Construction sites.

Haulage routes will be planned to restrict heavy vehicle movements, heavy deliveries, and loading and unloading processes to daytime periods and to locations at a suitable distance from sensitive receivers to minimise disturbance. Reduced speed limits for haulage routes across Construction areas will be imposed in order to minimise noise and emissions and to provide increased safety across the sites for personnel. The Superintendent will ensure that all haulage vehicles that are transporting materials to and from Construction sites have their loads secured and covered to prevent spillage or emissions.

In the event that GEJV identify potential alternative haulage routes or Construction access tracks on the basis that there is no other reasonable or feasible alternative, GEJV will prepare a Consistency Assessment for submission to Roads and Maritime and the ER. The assessment will provide evidence that the use of alternative haulage routes or access tracks is justified and that impacts are generally in accordance with
the approved Project and the EIS, as amended by the SPIR, as per NSW-CoAs A1 and A2. Alternative haulage routes or Construction access tracks will, as a minimum, meet the following requirements:

- be located on relatively flat ground to minimise soil and water quality impacts
- be located as far away as possible from residential receivers, where this is reasonable and feasible
- be located where there is easy and safe access to the Construction site
- will have no impact upon matters listed under the EPBC Act or *Biodiversity Conservation Act 2016*
- will result in no additional vegetation clearing (over and above that approved as part of the Project).

For haulage routes or access tracks located outside the Construction footprint, further environmental assessment and approval may be required.

The planning of haulage routes will occur in consultation with Penrith City Council and Liverpool City Council.

GEJV has completed an indicative assessment of the traffic movements relating to the Project and concluded that approximately 100 extra vehicles (inclusive of light and heavy vehicles) would utilise The Northern Road and Elizabeth Drive throughout the day to gain access to the Project as identified in Figure 6-1. It is estimated that 62 light vehicle movements in peak hour (morning and afternoon) on average for any one worksite will be generated by Construction workers during peak Project Construction periods.

### 8.9 Construction Traffic Staging

Construction Traffic Staging for the permanent connection works will be further developed in the TSP’s for the Project. Staging plans are also prepared in conjunction with adjoining contractors and for each stage of the Project.

It is generally intended that the works will be constructed in the following stages:

**Table 8-2 - Construction Traffic Staging**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
</table>
| Stage 1 | Construct the new North and Southbound alignment between Chainage 900 to 5350 and 5500 to 5750. With interim pavement to be constructed on the southbound carriageway for use in Stage 2.  
**Construct new access for existing residences off Leppington Pastoral Company Access Road.** |
| Stage 1a | Construct the new Southbound Alignment between Chainage 150 to 650, and construct temporary pavement along existing Northern Road and the Leppington Pastoral Company Access Road. |
| Stage 1b | Traffic to be switched to the newly constructed southbound carriageway and construct the northbound carriageway between chainage 50 to 700 and the westbound Leppington Pastoral Company Access Road and intersection with Northern Road. |
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<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1C</strong></td>
<td>Temporary Pavement for traffic switches between the north and southbound carriageways and the eastbound Leppington Pastoral Company Access Road. Temporary pavement on northern road between chainage 750 and 1000.</td>
</tr>
</tbody>
</table>
| **Stage 2** | Traffic will be switched onto the newly constructed southbound carriageway between chainage 900 and 5100.  
**Construct southbound carriageway between chainage 650 and 900, and construct temporary pavement from southbound carriageway to northbound carriageway between chainage 750 to 1000.**  
Construct The Northern Road (Existing East) to denoted Limit of works.  
Construct northbound carriageway between chainage 1000 to 5200. |
| **Stage 2a** | Construct southbound carriageway between chainage 5350, including Eaton Rd East to 5750.  
Construct Eaton Road West and intersection with The Old Northern Road and extension of The Old Northern Road. |
| **Stage 2b** | Construct northbound carriageway between chainage 5350 to 5750 and construction of temporary pavement between chainage 5100 and 5200 for traffic switch. |
| **Stage 3** | Remove temporary crossing between chainage 400 to 550.  
**Construct southbound carriageway between chainage 850 to 5100.** |

Traffic staging will be approved by Roads and Maritime, as part of the submission and approval process for all TSP’s that will be developed for each work area.

### 8.10 Temporary Roadways

Temporary roadway widening and temporary roads will be required to undertake the Construction particularly when interfacing with the existing The Northern Road for the Construction of tie-ins.

Road widening will be included in detailed staging drawings, and will be used to develop TSPs and Traffic Control Plans (TCPs).

Traffic switches will be planned and designed in accordance with relevant Roads and Maritime specifications, Australian Standards and Austroads guidelines. GEJV will prepare a TCP for each traffic switch implemented. The TCP will describe the traffic control devices to be used for the traffic switch. Traffic switches will only be used where the usual Construction workforce will be on site for a minimum of two days.

Approval for traffic switches will be obtained from Roads and Maritime and Liverpool City Council. The Emergency Services and local community will be informed of upcoming traffic switches.

### 8.11 Public transport

Although not anticipated, GEJV will consult with the bus operator (Busways) regarding the relocation of bus stops prior to commencement of Construction. Local residents and businesses will be informed of any
changes to bus operations and access during Construction. Consultation and communication with affected bus operators and the community will be in accordance with the CCS.

In the event that GEJV need to relocate bus stops, GEJV will provide:
- clear signage directions to and for relocated bus stops
- temporary indented bus bays of appropriate size and that do not restrict traffic flow on The Northern Road
- Bus turning points on The Northern Road.

Local residents and businesses will be informed of any changes to bus operations and access during Construction. Consultation and communication with affected bus operators and the community will be in accordance with the CCS.

8.12 Pedestrians and Cyclists

8.12.1 Pedestrians

Key pedestrian movements (formal and informal) along The Northern Road and all intersecting roads, where safe, reasonable and feasible, will be maintained during Construction. If required GEJV will prepare PMPs as part of GEJVs’ CTMP in accordance with Guide to Road Design Part 6A: Paths for Walking and Cycling (Austroads, 2017). The PMPs will consist of diagrams showing the allocated travel paths for Construction site personnel and pedestrians around or through Construction sites.

Where Construction work areas restrict access to existing footpaths or crossings, alternative routes will be developed. Where pedestrian access to businesses or properties is affected by Construction, arrangements for alternative pedestrian access, and way-finding signage if requested, to affected businesses or properties will be developed by GEJV in consultation with business or property owners prior to any disruption occurring, in accordance with the requirements of NSW-CoA E57, the ongoing consultation outlined in Section 1.4.2 and the approved CCS for the Project.

The pedestrian facilities at these locations to be outlined in the PMPs include:
- fit for purpose, all weather sealed temporary footpaths
- upgraded pram-appropriate surfacing for paths located near schools and childcare centres
- signposting and devices to guide pedestrians or site personnel along allocated walkways or paths
- defined work areas to ensure pedestrians avoid travelling between any safety barrier system and live traffic.

Details of diversions or changes to pedestrian movement will also be included in TCPs implemented during Construction.

Where required GEJV will undertake regular monitoring of footpaths or walkways to assess condition and identify any hazards.

8.12.2 Cyclists

The Northern Road provides an important recreational and club cycle route. Where required GEJV will maintain a standard of cyclist facilities equal to that of pre-Construction condition. Changes to cyclist movements or facilities will be outlined in diagrams and notes included in TCPs. Any temporary cycle paths or cycle crossings will be designed in accordance with the Guide to Road Design Part 6A: Paths for Walking and Cycling (Austroads, 2017) and NSW Bicycle Guidelines.
The following cyclist movement management measures will be included in GEJVs’ TCPs:

- clear and appropriate signage to inform cyclists of changed traffic conditions
- safety provisions, such as signposting, bollards and barriers where necessary
- provision of shoulders for cyclists in front of any temporary barriers if alternative provisions (suitable for a club cycle route, including alignment and grades) are not provided
- provisions to ensure the surface and cleanliness of shoulders are appropriate and maintained throughout Construction.

GEJV will maintain a standard of cyclist facilities equal to that of pre-Construction condition.

The Traffic Staging Plans will make formal and informal provision for both pedestrians and cyclists in accordance with the Traffic Control at Worksites Manual. Minimum shoulder and distance to barriers must be maintained at 0.5m as detailed in Specification G10 Annexure A2.1.

Access to bus stops and general access through the site will be addressed in the Traffic Staging Plans.

8.13 Property Access

At present there are businesses and residences that access The Northern Road and Eaton Road directly via a driveway. Access to all properties will be maintained during Construction unless otherwise agreed by the relevant business owner, property owner or occupier.

The CLM will consult with property or business owners identified as being potentially impacted by traffic management arrangements, as required by NSW-CoA E57. Consultation will occur four weeks prior to the commencement of any Construction works that will affect property or business access in accordance with the requirements of Specification G10 and the approved CCS for the Project. The purpose of the consultation is to inform property or business owners of the extent and timing of the Construction works that will affect access, identify temporary alternative access arrangements or other management measures and determine any special arrangements required. The CLM will maintain regular communication with affected property or business owners during the period that Construction impacts access.

Disruption to property access will be minimised by:

- providing all-weather access arrangements for vehicles required to cross active Construction sites to access properties
- maintaining existing parking arrangements at bus stops
- ensuring continuity of services to properties such as garbage collection and mail delivery
- ensuring awareness of Construction workers to access arrangements, including movement of Construction vehicles near property access points
- maintaining existing turn movements to all properties and businesses
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8.14 Parking
The locations for Construction site offices will be determined by the GEJV Ancillary Facility Management Plans. GEJV VMPs will include provisions for appropriate off-road areas for Construction traffic parking, including for workforce parking and site visitors. VMPs will describe access locations and safe entry and exit to and from all such parking areas.

Parking arrangements for businesses and properties are not anticipated to be impacted by the Project, including at Luddenham Town Centre. However, where required any specific requirements are identified during consultation with affected businesses and properties, GEJV will implement appropriate arrangements, including providing temporary signage, for parking.

8.15 Construction Zone
Construction Traffic shall consist of all vehicles associated with the Construction works, inclusive of GEJV machinery and vehicles, subcontractors’ vehicles, Roads and Maritime vehicles and authorised visitors’ vehicles.

All Construction traffic vehicles shall be fitted with reversing quacker/beeper alarm, UHF two way radio, amber revolving roof mounted light/beacon, fire extinguisher and first aid kit. The amber beacon shall be switched on when on site and turned off when leaving site and travelling on the roadway.

All Construction traffic shall drive in accordance with the road laws and site rules and dedicated haulage routes where prescribed.

All drivers and operators shall make two way radio communications and establish eye site before proceeding to work or operate near each other. Where a single lane ramp exists on site, traffic shall also make two way communications indicating that they plan on travelling up or down a specific ramp. The operator will proceed with:

TRACING A SINGLE LANE RAMP – Where a single lane ramp exists on site, operators shall make two way communications indicating that they plan on travelling up or down a specific ramp. After calling on the two way radio, the operator shall then proceed to traverse the ramp. Where an operator has called to travel the ramp on the two way radio and an operator has already called and is travelling the ramp in the opposite direction, the second operator shall wait until the first operator has arrived. Regardless of if the operator travelling in front has called on the radio, all operators shall advise their own ramp movement prior to trafficking a ramp.

TIPPING MATERIAL – Large trucks delivering material will be a frequent operation on site. The trucks will typically be in congested areas with up to several vehicles operating in the area at any one time. All operators are to enter and exit the area from the accesses nominated on the daily prestart and JHA. Truck movements in the tipping area shall be coordinated by a spotter communicating to all vehicles by two way communication. The spotter shall watch particularly for truck reversing movements and advise trucks to stop when in the correct location to tip in. Trucks shall only be permitted on flat areas with cross falls less than 3% grade.

DELIVERY OF GOODS – Delivery of goods on site shall be through nominated entry and exit locations on site in accordance with area specific traffic management plans. Delivery operators that have not been inducted on site shall be escorted by a light vehicle/inducted personnel. The escort vehicle is to escort immediately in front of the delivery vehicle with an amber rotating beacon and two way communications to all plant in the immediate areas. The delivery vehicle is to also be escorted off site through a nominated exit location. Depending on the entry and exit location requirements, traffic controllers may be required to assist.

INTERACTION OF LIGHT VEHICLES AND HEAVY PLANT –
• LV must give way to heavy mobile equipment at all times unless site traffic management conditions stipulate otherwise.
• When following heavy vehicles/earth moving machinery, notify the operator via 2 way radio that it is following.
• When a light vehicle enters a Construction site, where earthmoving machinery is operating, prior to entering the site the LV driver is to notify all operating machinery of his/her intent to enter the site in a LV, and receive a response back from the operator/s to confirm the message was received.
• Light vehicles shall only be parked in designated areas with handbrake applied. Vehicles with a manual gearbox shall be left in gear and vehicles with an automatic gearbox shall be left in park.
• Efforts must be made to plan to avoid heavy plant and people working together whenever possible.
• Personnel are to be made aware of Heavy vehicle “Dangerous Shadow” areas while moving or working around this type of equipment.
• Mobile plant operators and ground workers will wear high-visibility clothing in accordance with the requirements of AS/NZS 4501.
• When spotters are used they must keep in constant visibly and verbal contact with the Mobile Plant Operator.
• Permission to work within the Dangerous Shadow areas can only be given by the Project Manager. A JHA will be completed prior to work to be performed within Dangerous Shadow areas of the Mobile Plant. The JHA will stipulate positive communication will be maintained at all times by verbal radio communications between operator and person/s working inside the Dangerous Shadow areas - eye contact and/or hand signals alone are NOT adequate communication. The JHA will be signed off by both the worker/s and the mobile plant operator.
• Mobile plant operators are to stop work immediately and ground the bucket if a person or light vehicle enters the Dangerous Shadow area without the operator’s consent.
• When personnel require entry into the Dangerous Shadow areas of any mobile plant that mobile plant is to shut down and ground all Ground Engaging Tools (GET) prior to the personnel approaching the mobile plant.
• For high risk areas an exclusion zone will be erected. i.e. (Scraper) circuit, must have exclusion around the work area to prevent light vehicles from entering the area without permission).

8.16 Emergency services

Emergency services will be kept fully informed of all changed traffic conditions throughout the Construction of the Project. GEJV’s Traffic Manager will arrange for representatives of the Emergency Services to attend regular traffic control and stakeholder meetings to ensure they remain informed of current or upcoming changes to traffic conditions.

The Traffic Manager and/or CLM will notify the emergency services providers when access to properties or traffic routes is expected to be impeded for any period of time. Signage will be implemented to ensure that all Construction and adjusted property accesses are clearly signposted.

8.17 Road maintenance

GEJV will maintain existing or temporary roads, within the Construction footprint used by Construction traffic during the Project. Maintenance activities will include repairing potholes, removing debris and overgrown vegetation, cleaning kerbs and gutters and re-applying line-marking.

GEJV will co-operate with Roads and Maritime and Liverpool City Council and its personnel or contractors in carrying out maintenance of existing roads outside the Project area.
GEJV has engaged a suitably qualified consultant to prepare Road Dilapidation Reports for the local roads and associated infrastructure to be used by Construction vehicles during the Project.

The Dilapidation Reports will be provided to Liverpool City Council (if permitted by the property owner) within three weeks of completing the road dilapidation surveys and at least one month before the use of the local roads Construction vehicles.

GEJV is responsible for ensuring that any damage to roads as a result of works associated with Construction of the Project is rectified so as to restore the road to at least the condition it was pre-Construction, unless otherwise agreed by Liverpool City Council.

The use of local roads by heavy vehicles to access temporary ancillary facilities would be limited as far as is reasonably practicable.

8.18 Special events

A special event in traffic management terms is defined as any planned activity that is wholly or partially conducted on a road, requires multiple agency involvement, requires special traffic management arrangements and may involve large numbers of participants and/or spectators. Special events may include:

- local festivals and celebrations
- annual local events
- sporting events
- parades and marches
- daylight savings changes
- seasonal variations in traffic volumes
- NSW holiday periods.

Where special events are expected to generate additional vehicle or pedestrian traffic in the area affected by Construction of the Project, GEJV will co-operate with the event organiser, Roads and Maritime, local Councils and other authorities to facilitate traffic and pedestrian flows on the existing road network or adjacent to the Construction sites.

GEJV will also liaise with Liverpool City Council in relation to upcoming traffic generating special events when planning any traffic arrangements to avoid any conflict with Construction activities.

8.19 Traffic Incident Management Plan

A traffic incident represents an unplanned event creating a temporary reduction in road capacity that leads to an adverse impact on traffic flow. Incidents may result from vehicle disablements, impacts, spills, roadway debris, stranded vehicles, and secondary incidents through driver distraction, adverse weather conditions and maintenance activities.
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
The Northern Road Upgrade - Between Mersey Road and Eaton Road

Unattended events and incidents are a major contributor of traffic congestion, increased travel times, disruption to public transport, freight operators, local commerce and traveling public.

Effective strategies and provision for incidents will reduce incident related delay and congestion, improve the safety of motorists and crash victims, incident responders.

To achieve these objectives, GEJV will implement the following provisions; as per table 8-3 Incident Management and Response-
TABLE 8-3 - INCIDENT MANAGEMENT AND RESPONSE

<table>
<thead>
<tr>
<th>Objective</th>
<th>How Addressed</th>
<th>Nominated responsible person / contact details</th>
</tr>
</thead>
</table>
| Nominated site contact to deal with issues of clearing The Northern Road when notified by Roads and Maritime Traffic Commander or NSW Police | Responsible GEJV personnel identified and nominated. Nominated persons provided with contact list of local subcontractors / contacts with arrangements to provide required services e.g. Vehicle Recovery Services, Road Sweeping, Spill Response, Heavy Lifting Plant, Traffic Control etc. | Jamie Barry – 0477 805 181  
Yogi Yoganathan – 0408 360 741  
Richard Kelly (south) – 0427 802 387  
Karl Reusche (north) – 0427 144 510 |
| Availability of supplementary Traffic Control Measures                    | TM and/or Traffic Controllers to maintain a reserve supply of suitable traffic control devices e.g. traffic barriers, cones, signs and debris clearing tools | Jamie Barry – 0477 805 181  
Yogi Yoganathan – 0408 360 741  
Richard Kelly (south) – 0427 802 387  
Karl Reusche (north) – 0427 144 510  
Traffic Control Contractor emergency contact – TBA |
| Have available, heavy lifting equipment during construction capable of moving temporary concrete safety barriers. | During construction phases, Excavators and/or other suitable plant e.g. Backhoe, with lifting capacity will remain at various locations within the ‘limit of works’. GEJV will maintain suitable lifting equipment for use with temporary concrete barriers | Plant Contractors – contacts maintained by the following nominated responders  
Jamie Barry – 0477 805 181  
Yogi Yoganathan – 0408 360 741  
Richard Kelly (south) – 0427 802 387  
Karl Reusche (north) – 0427 144 510 |
| Contact to be made with Traffic Management Centre immediately for incidents occurring during working hours | Emergency Preparedness and Response Standard (GC-HSE-STA-002) provides action flowchart for responders | Jamie Barry – 0477 805 181  
Yogi Yoganathan – 0408 360 741  
Richard Kelly (south) – 0427 802 387  
Karl Reusche (north) – 0427 144 510  
Roads and Maritime Project Manager (or delegate) |
| Provide a response within 1hr to after-hours call-outs from TMC or Police | Nominated responders details (and alternates) provided to TMC, Roads and Maritime, Liverpool City Council | Jamie Barry – 0477 805 181  
Yogi Yoganathan – 0408 360 741  
Richard Kelly (south) – 0427 802 387  
Karl Reusche (north) – 0427 144 510 |
| Ensure the area is restored to the full and compliant safety level within a minimum amount of time. Arrange recovery of any Construction vehicle if in the event of breakdown that occurs en-route or within Construction sites or ancillary facilities. | Provide capacity on site for basic early traffic control that may be required at an incident, such as cones, signs, clearing debris  
Keep suitable plant available on site during construction for moving temporary concrete safety barriers; | Jamie Barry – 0477 805 181  
Yogi Yoganathan – 0408 360 741  
Richard Kelly (south) – 0427 802 387  
Karl Reusche (north) – 0427 144 510 |
| Keep records of communications with the Traffic Management Centre and NSW Police, and Keep records of all traffic incidents attended | Traffic incidents and associated records / documentation will be entered into Georgiou’s reporting database QHEST  
The Traffic Manager will prepare a report for each traffic-related incident. The report will include photographs of the road approaches at 10 m intervals starting from at least 200 m each | Attending GEJV representative. |
9 SITE SAFETY

9.1 Traffic Risk Assessment Workshop

GEJV has conducted a traffic management risk assessment workshop prior to the commencement of any traffic management works. The workshop was attended by GEJV Construction Manager, Traffic Manager, the road designers, Roads and Maritime personnel, the Roads and Maritime Environmental Manager, Local City Council representatives from Liverpool City Council and Penrith City Council was invited however they did not attend the workshop.

The purpose of the workshop was to identify and address the risks associated with the road safety, traffic management and local road network issues specific to the Construction site.

The outcomes of the workshop are available in Annexure B of this CTMP. The identified risks will be managed through the implementation of TCPs and other measures outlined in this CTMP. The Traffic Management Risk Register will be reviewed against upcoming works and updated accordingly on a monthly basis.

9.2 CTMP Implementation, Monitoring and Measurement

Indicative Traffic Control Plans (TCPs) have been prepared for the Project. TCPs will be updated progressively throughout Construction to identify measures that will be installed to warn traffic and guide it around or past the Construction sites. TCPs may be in the form of written documents and/or diagrams. TCPs will incorporate Vehicle Movement Plans (VMPs) and Pedestrian Movement Plans (PMPs) if required. TCPs will also identify any property or business access issues related to Construction.

The GEJV Traffic Manager and Superintendent will ensure that the traffic management measures are implemented in accordance with the approved site specific TCPs. TCPs will be submitted to the Roads and Maritime Project Manager for approval at least three working days before the commencement of any activity which affects traffic conditions for a particular section of the Project. TCPs will be prepared in consultation with the TMC, all relevant stakeholders including Liverpool City Council, local bus companies and other contractors. The GEJV Superintendent shall inspect and monitor traffic movements around the site in conjunction with the personnel who have erected the control measures. The outcomes of the inspection will be documented for the information of the Project Team.

Inspections will be undertaken as required and at a minimum on the following occasions:
CONSTRUCTION TRAFFIC MANAGEMENT PLAN

The Northern Road Upgrade - Between Mersey Road and Eaton Road

- Before the start of work activities
- Closing down at the end of the shift period.
- A daily record of inspections will be kept indicating:
  - When traffic controls were erected.
  - When changes to controls occurred and why the changes were undertaken.
  - Any significant incidents or observations associated with the traffic controls and their impacts on road users or adjacent properties.

Where significant changes to the work or traffic environment or adverse impacts are observed, the controls will be measured as a matter of urgency. All variations to the TCP, non-conformances, incidents and accidents will be recorded. Copies of completed records will be kept in the Traffic Management folder.

Regular site inspections will be undertaken no less than two times a day during normal working business hours or as often as required by the traffic management controllers. During the site inspections, any signage that is not clearly visible to the public that should be in accordance with the TSP, will be addressed by the inspecting traffic controller and recorded in the daily diary. Other observations to be included in the daily inspection record will be:

- Conditions of signage: Signs will be monitored daily for conditions/suitability. Signs may need to be cleaned, repositioned, re-erected or replaced if damaged/tampered/vandalised. The sign condition checks will be recorded daily in the site inspection records.
- Delineating devices will be checked and recorded for cleanliness and visibility to road users during all conditions including sunup and sundown.

Weekly site inspections will be conducted by the Traffic Manager to ensure adequate inspection, monitoring and maintenance of traffic management arrangements and devices. The inspections will be carried out and recorded.

10 SIGNAGE – GENERAL

10.1 Traffic Control Devices

Traffic control devices are all signs, traffic signals, pavement markings, traffic islands, and/or other devices placed or erected to regulate, warn and/or guide road users. The function of a traffic control device is to regulate traffic (assign right of way, and indicate regulations in force), warn road users of hazards or regulatory controls ahead, (in particular they also warn of temporary hazards that could endanger road users or workers at roadwork sites), and guide traffic (e.g. guide signs to inform road users of directions to destinations, identify routes, and pavement markings to guide the travel path of vehicles (AUSTROADS, Part 8, 1988, p1).

The Project Team acknowledges the importance of traffic control devices and how they influence safety for road users, in particular where temporary traffic controls are implemented at work sites. Traffic control signs and devices required during Construction will be identified in TCPs and implemented in accordance with the Traffic Control at Worksites manual (RTA, 2010). GEJV will obtain all necessary approvals for traffic control devices used on the Project.

The requirements for traffic control devices during the Construction phase will be included in the TSP’S and TCP’s for particular work areas.

10.1.1 Temporary Sign Posting

Temporary sign posting will be developed and included in the TSP’s and TCP’s, and be submitted to Roads and Maritime as part of the ROL approval process. Signs will be used by the Project Team to warn and
inform road users of changed traffic conditions ahead and guide and control road users to safely negotiate the road ahead.

Temporary sign posting will include:

- Regulatory signage.
- Directional signage.
- Information signage.

The Project Team will ensure that all sign posting installed on this Project:

- Is assessed for use in accordance with the appropriate requirements.
- Manufactured in accordance with the requirements of the Australian Standards.
- Installed in accordance with the relevant guides and standards.
- Provide guidance in a controlled and consistent manner, without information overload.
- Ensure signs are not a hazard in themselves.
- All contradictory signs or markings are covered or removed.
- When unwarranted, are covered or removed.
- Regularly maintained and repaired/replaced when damaged.

10.1.2 Project Information Signs

Project information signs will be provided by Roads and Maritime and installed by the Project Team on each approach to the Project along The Northern Road as directed by Roads and Maritime.

10.1.3 Variable Message Signs

During the Construction phase, GEJV will utilise portable Variable Message Signs (VMS) to provide advanced warning messages and provide changed traffic condition information to road users.

The VMS can also be used to support Roads and Maritime’s incident management operations, and for the display of road safety messages.

The use of VMS’s and their locations will be incorporated within the TSP’s and TCPs.

The Project Team will deploy the VMS and set standard messages approved by the Roads and Maritime.

10.1.4 Flashing Arrow Signs

Flashing arrow signs are key components of most Traffic Control Plans, in particular for use when closing single lanes along dual carriageways, and conducting mobile traffic control operations.

Flashing arrow signs will be used where required by a TCP developed under a TCP.

10.1.5 Radar Activated Speed Signs

During the development of the TSP’s locations for radar activated speed signs will be nominated. The location of these signs will generally be areas where GEJV may expect excessive speed in these areas.

10.1.6 Lighting towers.

During the development of the TCP’s areas that require the use of lighting towers will be nominated. The location of these will generally be areas where GEJV may expect excessive speed in these areas.
11 COMPLIANCE MANAGEMENT

11.1 Roles and responsibilities

GEJV’s Project Team organisational structure and overall roles and environmental responsibilities are outlined in Section 5.1 of the CEMP. Specific responsibilities for the implementation of traffic and transport controls are detailed below.

11.1.1 Project Manager / Construction Manager

The Project Manager / Construction Manager has the overall responsibility to ensure that all works are completed in a safe and efficient manner for the Project. To meet these needs, the Project Manager/Construction Manager will:

▪ Provide the necessary resources for the development and implementation and monitoring of Worksite Traffic Management Plans and strategies.
▪ Ensure that employees or subcontractors have the required skills and training to conduct worksite traffic management activities.
▪ Ensure any incidents are recorded and closed out and appropriate actions taken with minimal time frames.
▪ Ensure that all identified hazards are controlled.
▪ Ensure this CTMP is complied with.
▪ Comply with GEJV’s Worksite Traffic Management Policy.

11.1.2 Traffic Manager

The Traffic Manager (TM) is responsible for implementing the CTMP in accordance with the requirements of the OACEMP, all relevant Roads and Maritime specifications, TMC and Police. The TM has the following responsibilities:

▪ Ensure that the approved traffic management measures are implemented and maintained in accordance with the approved plans.
▪ Carry out daily regular inspections of the traffic control measures to ensure that they are effective.
▪ Amend and update the plans, as required, to ensure that they remain current as the work progresses. Identify situations where traffic congestion, or unsafe conditions for vehicles, cyclists, pedestrians and workers, are occurring and provide recommendations for improvement.
▪ Liaise with Roads and Maritime and other authorities such as Transport Management Centre (TMC), New South Wales Police and Liverpool/Penrith City Councils on traffic management matters for the Site.
▪ Facilitate traffic awareness and give toolbox talks to site personnel.
▪ Develop TMP’s and TCP’s and obtain required approvals from Roads and Maritime and relevant Authorities of all traffic management measures on site.
▪ Arrange traffic control audits and implement audit close outs.
▪ Regularly monitor the traffic flow to ensure compliance with the Contract.
▪ Update the Project monthly report on all traffic related measures (recording and reporting on all traffic accidents weekly report compliance and noncompliance with ROL conditions, speed management and queue management.
▪ Consult on traffic matters with local businesses and residents.
▪ Arrange the design and certification of site entry and exit facilities to ensure compliance with the nominated main line speed requirements both within and outside ROL licence time periods.
▪ Undertake traffic-based risk assessments of the Works.
11.1.3 GEJV Superintendent

The GEJV Superintendent is responsible for the daily work functions including planning and supervising and ensuring safe work practices are being complied with by all staff and subcontractors. The GEJV Superintendent has responsibility for the following:

- Implement the worksite CTMP in accordance with the developed documentation.
- Ensure that employees or subcontractors have the required skills and training to conduct worksite traffic management activities.
- Document and investigating incidents or near-miss incidents relating to the worksite traffic management processes.
- Regularly inspect the workplace, monitoring working and traffic conditions and taking appropriate action where necessary.
- To rectify safety matters raised by employees within their area of responsibility.
- Ensure this CTMP is complied with.
- Comply with GEJV’s Worksite Traffic Management Policy.

11.1.4 Other Personnel Responsibilities

All other on site personnel including but not limited to subcontractors, delivery drivers and visitors must:

- Comply with this CTMP.
- Comply with GEJV’s Worksite Traffic Management Policy.
- Comply with GEJV’s Traffic Control Plans.
- Bring any issues/deficiencies/improvement opportunities to the attention of GEJV as soon as identified.

12 KEY PROJECT STAKEHOLDERS

<table>
<thead>
<tr>
<th>Company</th>
<th>Name</th>
<th>Position</th>
<th>Contact Details</th>
</tr>
</thead>
</table>
| Roads and Maritime | Easwaran Veeragathipillai | Project Manager | M: 0400 561 753  
E: Easwaran.Veeragathipillai@rms.nsw.gov.au |
| GEJV               | Adam Boyd          | Project Manager        | M: 0419 501 731  
E: Adam.Boyd@gejv.com.au                          |
| GEJV               | Shane Cahill       | Construction Manager   | M: 0418 408 334  
E: shane.cahill@gejv.com.au                         |
| GEJV               | Yogi Yoganathan    | Traffic Manager        | M: 0408 360 741  
E: yogi.yoganathan@gejv.com.au                      |
| GEJV               | Jamie Barry        | GEJV Superintendent    | M: 0447 805 181  
E: jamie.barry@gejv.com.au                          |

12.1 Communication

Roads and Maritime has prepared a Community Communication Strategy (CCS) in accordance with the requirements of NSW-CoA B1 to document the approach to stakeholder and community communications for
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
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the Project. The CCS identifies opportunities and tools for providing information and consulting with the community and stakeholders during the Construction of the Project. GEJV will support the delivery of the CCS, with specific measures outlined in the CCLP (refer Appendix B12 of the CEMP).

Traffic management information will be communicated to the community and stakeholders in accordance with the principles and procedures outlined in the CCS. Further detail about the CCS is provided in Section 5.5.3 of the CEMP.

GEJV’s CLM will provide timely, accurate, relevant and accessible information about changed traffic and access arrangements, potential delays to road users and local communities, and out of hours works, with provision for feedback through a complaints line during Construction.

12.1.1 Consultation with Key Stakeholders
The Project Team will regularly consult with key stakeholders directly, and advise them of the works and any major changes in traffic conditions.

12.1.2 Notification to Emergency Services
The Project Team will ensure all emergency services agencies are regularly consulted about proposed changed traffic conditions. This advice will be in writing (either minuted records of meeting, email, letter or fax) prior to the changes being implemented.

12.1.3 Static Roadwork Information Signs
The installation of roadwork information signs may be used to notify road users of changes to the road network during the Construction of the Project. These may advertise changed traffic conditions, such as road closures, turning restrictions and periods where delays are expected.

These information signs will be incorporated within the site TSPs and specific TCPs, and may be installed up to 2 weeks prior to the traffic changes. Further, when changes to the existing lane, and/or intersection configurations occur (T1-23) “Changed Traffic Conditions Ahead” warning signs will be incorporated within the site specific TCPs. These signs will remain in position for between 4 to 8 weeks after the change has been made.

12.1.4 Variable Message Signs (VMS)
The Project Team will utilise portable VMSs to provide advance notice of traffic control works and changed traffic condition information to road users during the works. The VMSs may also be used to support Roads and Maritime’s incident management operations, and for the display of road safety messages.

12.1.5 Changed Traffic Condition Advertising
All media advertising regarding the Project will be developed and implemented by Roads and Maritime communications department, including advertising of changed traffic conditions that have the potential to impact on road users, via newspaper media, radio, the Project website and Roads and Maritime weekly traffic updates.

The Project Team will liaise with Roads and Maritime in the scheduling and development of advertising material.

12.1.6 Community Letterbox Notifications
GEJV will develop and distribute notifications after approval by Roads and Maritime in the scheduling and development of

▪ letterbox material
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
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- Project 24-hour telephone line – to address community enquiries concerning planned traffic arrangements including any temporary traffic switches
- display material – regularly updated displays including access information, temporary traffic arrangements, traffic disruptions, traffic restrictions and temporary detours/diversions.

12.2 Complaints management

Roads and Maritime has developed a Complaints Management System (CMS) to document the overall approach to complaints management for the Project. GEJV will adopt the requirements of the CMS, including reporting requirements. The CMS includes a Complaints Register which will record the details of all complaints relating to the Project.

Further detail about the CMS is provided in Section 5.5.3 of the CEMP.

The Project Team will, in conjunction with Roads and Maritime, set up proactive measures to liaise, consult and communicate with the community, Liverpool City Council, emergency service agencies and key stakeholders during the Construction phase.

GEJV will liaise and coordinate Construction works with other contractors undertaking adjacent concurrent works which may involves road occupancies and traffic switches including The Northern Road Stage 2 and Stage 6, property and land developers.

12.3 Training

GEJV will ensure personnel carrying out traffic management are suitably qualified and experienced. Below is a list of competencies required for development and implementation of worksite traffic management plans obtained through undertaking the appropriate training for Roads and Maritime Traffic Control at Worksites:

**TABLE 12-2 - WORKSITE TRAFFIC CONTROL COMPETENCIES**

<table>
<thead>
<tr>
<th>Items</th>
<th>Competency Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of traffic control plans</td>
<td>Roads and Maritime TCWS Design and Inspect Traffic Control Plans (Orange Card)</td>
</tr>
<tr>
<td>Supervision of works involving worksite traffic management</td>
<td>Select/Modify Traffic Control Plans (Red Card) and/or Apply Traffic Control Plans (Yellow Card)</td>
</tr>
<tr>
<td>Traffic Controllers</td>
<td>Authorised Traffic Controller (Blue Card)</td>
</tr>
</tbody>
</table>

All employees, contractors and utility staff working on site will undergo site induction training that includes traffic and transport management issues prior to Construction commencing. The induction training will address elements related to traffic and transport management, including:

- existence and requirements of this CTMP
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
The Northern Road Upgrade - Between Mersey Road and Eaton Road

- relevant legislation and regulations
- incident response, management and reporting
- road safety
- road occupancy
- standard Construction hours
- complaints response and reporting
- roles and responsibilities for traffic management
- requirements to maintain surrounding property access for residences, business owners, and their visitors, and to minimise disruptions to these properties for the duration of Construction
- temporary and interim traffic arrangements
- response procedure for dealing with traffic incidents.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in traffic and transport management or those undertaking an activity with a high risk of environmental impact. Site personnel will undergo refresher training at not less than six monthly intervals.

Daily pre-start meetings conducted by the GEJV Superintendent will inform the site workforce of any environmental issues relevant to traffic and transport that could potentially be impacted by, or impact on, the day’s activities.

Further details regarding staff induction and training are provided in Section 5.3 of the CEMP.

12.4 MONITORING AND INSPECTIONS

The Project Team will conduct regular inspections of the temporary traffic controls during the Construction phase. These inspections will be carried out in accordance with Table 12-3 below, Traffic Control at Worksites Manual⁷, and Annexure A of Australian Standard 1742.3.

The main types of inspections are:
1. Pre-start and pre-closedown inspections of short-term traffic control.
2. Weekly inspections of long-term traffic control.
3. Intermittent inspections of long-term traffic control (including night inspections).
4. Pre-opening inspections of temporary roads.
TABLE 12-3 - INSPECTIONS AND MONITORING RELEVANT TO TRAFFIC AND TRANSPORT

<table>
<thead>
<tr>
<th>Inspection / monitoring</th>
<th>Frequency</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic control plan inspection</td>
<td>Daily</td>
<td>GEJV Traffic Manager</td>
</tr>
<tr>
<td>Ensure all traffic control signs and devices are functioning and implemented in the correct location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic management risk assessment checklist</td>
<td>Daily</td>
<td>GEJV Traffic Manager</td>
</tr>
<tr>
<td>Traffic control safety inspection</td>
<td>Monthly</td>
<td>GEJV Traffic Manager / Roads and Maritime Project Manager</td>
</tr>
<tr>
<td>Ensure traffic control plans implemented are approved and Construction sites are operating safely</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROL compliance monitoring</td>
<td>Weekly or as required for traffic switches</td>
<td>GEJV Traffic Manager</td>
</tr>
<tr>
<td>Road dilapidation inspection</td>
<td>Pre-Construction and immediately prior to Completion</td>
<td>GEJV Traffic Manager / Roads and Maritime Project Manager / Liverpool City Council</td>
</tr>
</tbody>
</table>

Requirements and responsibilities in relation to monitoring and inspections, additional to those identified in Table 12-1 above are documented in Section 7.1 and Section 7.2 of the CEMP.

12.5 Non-conformances

A non-conformance is the failure or refusal to comply with the requirements of project system documentation, including this CTMP. Any member of GEJV’s Project Team may raise a non-conformance or improvement opportunity.

When a non-conformance is detected, the process described in Section 6.6 and Annexure A9 of the CEMP will be implemented. The Quality Plan describes the process for managing non-conforming work practices and initiating corrective / preventative actions or system improvements in accordance with the process outlined in Section 6.6.1 of the CEMP.

12.6 Incident planning and response

Response to incidents will be undertaken as described in Section 5.6 of the CEMP and in accordance with the Environmental Incident Classification and Reporting Procedure (refer to Annexure A7 of the CEMP) and Section 8.19 of this CTMP.
12.7 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of traffic management measures, compliance with this CTMP, conditions of approval and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 6.4 of the CEMP. All audits conducted shall review the following items:

- TCP, road design plans, inspections
- Traffic control measures in place at the time of the audit
- Signage, Line Marking and other devices
- ROL and SZA
- Site Entry points, Gates, Signs and fencing
- Provision for cyclists, Pedestrians, private and business access points
- Roadside lighting and night visibility.

12.7.1 Traffic Control Road Safety Audits

The Project Team will conduct road safety audits during the construction phase, focusing on identifying any deficiencies, and/or safety hazards, regardless of current practice, standards or operations, to enable the Project Team to implement corrective solutions.

These audits will be conducted in accordance with the Roads and Maritime Guide to Road Safety Audit Practices (RTA, 2011), with reference to the current practices outlined in AUSTROADS Road Safety Audit Guide (2nd edition, 2002).
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GEJV’s Traffic Manager will be responsible for managing the road safety audit program. The GEJV Traffic Manager or representatives undertaking internal audits must be an Orange Card accredited TCP designer. Internal Audits

The Project Team will apply the following methodology for the internal road safety audits:

- A commencement meeting between the Roads and Maritime audit team and GEJV members.
- Review relevant documents (including design plans, previous audits etc).
- Conduct site inspections during the day and night, noting deficiencies and hazards.
- Assess the inspection findings in accordance with relevant practices, guides and standards.
- Forward a draft list of deficiencies to the responsible team member for review, and if necessary immediate action.
- Prepare a concise audit report, which includes a table detailing the deficiencies.
- Road safety audit reports will be provided to the Roads and Maritime Project Manager
- Identify and assess their preliminary risk rating.
- Conduct a completion meeting with relevant team representatives.
- GEJV Traffic Manager or representative is to provide a response to the audit findings.
- Where necessary, program necessary actions to rectify deficiencies.

12.7.2 External Audits

GEJV will engage an external auditor as required.

External road safety audits will be conducted by independent, suitably qualified road safety, and traffic engineering professionals, who have undergone road safety audit training and received certification under the Institute of Public Works Engineering Australia (IPWEA) Accreditation Scheme. As a minimum, an experienced auditor who has achieved Road Safety Auditor Level 3 certification (on the Roads and Maritime Services Road Safety Auditor Register) must lead the team conducting the audits.

12.7.3 Frequency and Responsibility

Audit findings will be actioned as per the risk levels stipulated in the audit report, e.g. high risks will require immediate action. Road safety audit reports will be provided to the Roads and Maritime Project Manager.

The frequency of the Road safety audits will be subject to the Construction program and the types of activities being conducted. The responsibility and frequency of audits is summarised in Roads and Maritime Specification G10 clause 2.8, and listed below.

<table>
<thead>
<tr>
<th>Audit</th>
<th>Responsibility</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>GEJV/ Roads and Maritime conduct</td>
<td>Once per month, per TMP</td>
</tr>
<tr>
<td>External</td>
<td>Independent Consultant</td>
<td>Once per 3 months or and before and after any traffic switch or stage modification.</td>
</tr>
<tr>
<td>Pre-opening audit of new roads and or major temporary traffic switches</td>
<td>As required</td>
<td>Independent auditor</td>
</tr>
</tbody>
</table>
12.7.4 Traffic control and stakeholder meetings

GEJV will arrange and attend regular traffic control and stakeholder meetings with relevant stakeholders for the duration of Construction of the Project. As a minimum, stakeholders will include Roads and Maritime, Liverpool City Council, Police, Emergency Services, school representatives, bus operators and any other relevant party. The Traffic Manager will arrange and coordinate the weekly meetings and maintain an action plan to close out any issues identified in the meetings.

12.8 Reporting

During the Construction phase, the Project Manager will include a section on Traffic management within the monthly report that is submitted to the Roads and Maritime.

The traffic management component of the report may include, but not be limited to, the following items:

- Current and upcoming critical issues, including those identified by Roads and Maritime and other relevant stakeholders, and measures to address these issues are to be included.
- A schedule of recent and proposed major traffic switches and changes to the road network.
- Reports on recent traffic, pedestrian and cyclist incidents.
- The current status of TCP development, approvals and implementation.
- The status of approved and anticipated ROL applications.
- Community and media feedback as they relate to road safety and traffic management issues.

In addition to the above, the Project Team will immediately report all major incidents that occur within the work site and forward details of the incident to Roads and Maritime within 1 working day.

GEJV will maintain accurate records substantiating all Construction activities associated with the Project or relevant to the conditions of approval, including measures taken to implement this CTMP. Records will be made available to the DP&E and DoEE upon request, within the timeframe nominated in the request.
13 REVIEW AND IMPROVEMENT

13.1 Continuous improvement

Continuous improvement of this CTMP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement. The continuous improvement process will be designed to:

- identify areas of opportunity for improvement of traffic management
- identify environmental risks not already included in the risk register
- determine the cause or causes of non-conformances and deficiencies
- develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- verify the effectiveness of the corrective and preventative actions
- document any changes in procedures resulting from process improvement
- make comparisons with objectives and targets.

GEJV will be responsible for ensuring Project environmental risks are identified and included in the risk register and appropriate mitigation measures implemented throughout the Construction of the Project as part of the continuous improvement process. The process for ongoing risk identification and management during Construction is outlined in Section 4.3.2 of the CEMP.

13.2 CTMP update and amendment

The processes described in Section 6.8 of the CEMP may result in the need to update or revise this CTMP. This will occur as needed.

Any revisions to this CTMP will be in accordance with the process outlined in Sections 1.6 and 6.8 of the CEMP.

A copy of the updated CTMP and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure - refer to Section 6.7.2 of the CEMP.
## 15 ANNEXURES

### Annexure A - Acceptance of Accountabilities Responsibilities

<table>
<thead>
<tr>
<th>JOB ROLE TITLE</th>
<th>NAME</th>
<th>SIGN</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>Adam Boyd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Manager</td>
<td>Shane Cahill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEJV Superintendent</td>
<td>Jamie Barry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic Manager</td>
<td>Yogi Yoganathan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property Adjustment Manager/Senior Project Engineer (south)</td>
<td>Richard Kelly (south)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Manager/Senior Project Engineer (north)</td>
<td>Karl Reusche (north)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor (north)</td>
<td>Mark Russel (north)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor (south)</td>
<td>Ed Storer (south)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project HS Manager</td>
<td>Jerry Cockburn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HSE Advisor</td>
<td>Mateo Setu</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Annexure B - Traffic Risk Register

- A separate Job Hazard Assessment (JHA) will be prepared for traffic control work and will be submitted in due course as per GEJV OHS Management Plan.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Risk / Hazard</th>
<th>Uncontrolled Risk Score</th>
<th>Mandatory Controls</th>
<th>Controlled Risk Score</th>
<th>Who is Responsible</th>
</tr>
</thead>
</table>
| Construction                     | Speeding motorist           | High                    | * Install traffic signs  
* TMC notification on website  
* Community notifications  
* Advance warning  
* VMS boards  
* Request police assistance as required  
* Police blitz prior to installation of speed reduction | Moderate              | GEJV, RMS, TMC    |
| Pedestrian hit by passing traffic|                              | High                    | * Maintain existing pedestrian access where applicable  
* Install no pedestrian access signs  
* Maintain access to bus stops  
* Communicate with bus companies  
* Community consultation | Moderate              | GEJV               |
| Entry/Exit to the construction site|                              | High                    | * Vehicle Movement Plan to be developed and submitted to delivery drivers  
* Adequate signage  
* Speed reduction to 60km/hr  
* Left in left out  
* Speed reduction to 60km/hr in Zone 1 to be extended past the Leppington Driveway | Moderate              | GEJV               |
| Traffic controllers hit by passing traffic|                              | High                    | * Provide escape routes  
* Speed reduction to 60km/hr when stopping traffic  
* Minimise traffic control requirements  
* Shadow vehicles to be considered for installation of signs  
* Controls as per TC@WS manual to be implemented for sign set up | Moderate              | GEJV               |
| Changed traffic conditions confusing drivers|                              | High                    | * Community notifications  
* Conduct road safety audit night and day time  
* Do not remove existing road alignment within 48 hours of switch  
* Prevent sign clutter  
* Ensure geometry of roundabouts conform to the requirements | Low                   | GEJV               |
| Traffic collision with traffic barriers|                              | Extreme                  | * Approved end treatments to be utilised  
* Shoulders to be maintained  
* Signage for reduced pavement width if applicable  
* Speed reduction if required  
* Ensure exclusion zones behind barriers is maintained  
* Exclusion zone behind barriers for electrical poles/services | Moderate              | GEJV               |
<table>
<thead>
<tr>
<th>Activity</th>
<th>Risk / Hazard</th>
<th>Uncontrolled Risk Score</th>
<th>Mandatory Controls</th>
<th>Controlled Risk Score</th>
<th>Who is Responsible</th>
</tr>
</thead>
</table>
| Excessive queuing | Moderate | * Traffic controllers to monitor traffic queue. Good site distance available  
* Do not stop traffic during peak times  
* Install speed reduction | Low | GEJV |
| Delay to traffic | Moderate | * Advanced warning signs to be installed  
* During major switches install VMS to warn motorists of expected delays 2 weeks prior | Low | GEJV |
| Heavy vehicle movements causing traffic incident | High | * Roundabouts remove end of queue  
* Set gates back off main alignment  
* Truck signs  
* Speed reduction to 60km/hr  
* Acceleration lanes and deceleration lanes to be installed as required  
* Speed reduction to 60km/hr to extend past Leppington Pastoral company entrance  
* Separate public traffic and construction traffic were ever practical | Moderate | GEJV |
| Interaction with other contractors | Moderate | * Conduct start up meetings with other contractors  
* Conduct meetings prior to any switches  
* Audit traffic staging to ensure compliance with other traffic staging | Low | GEJV |
| Confusion of motorist following major switch | High | * Advanced warning - VMS  
* Letter box drops  
* Community notification - Radio  
* Unbroken lines - no over taking  
* Directional arrows - painted  
* No over taking signs  
* Increase frequency of inspections  
* Road safety adult - day and night  
* Pilot vehicle at opening  
* Avoid peak travel periods - ie public holidays and weekend | Moderate | GEJV |
| Hitting cyclists | Extreme | * Provide space for cyclists  
* Signs to be deployed  
* Keep shoulders free of debris etc | Moderate | GEJV |
Annexure C - ROL Application Form and Conditions

ROL application will be submitted when the CTMP, Traffic Staging Plans (TSP) and Traffic Control Plans (TCP) are approved.
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
The Northern Road Upgrade - Between Mersey Road and Eaton Road

Annexure D - Traffic Staging Plans, Traffic Control Plans and Vehicle Movement Plans
Northern end works

1) This Traffic control plan is for works on The Northern Road Stage 4

2) Traffic Controllers to manage vehicles, pedestrians cyclists Safely around work area

3) Traffic Controllers to only control one lane of traffic at any time IE: one Traffic Controller required for each live lane of traffic

4) Traffic Controllers to be relieved every 2hrs when on stop/slow (or suitable change of duties as per TCAWS)

5) Traffic Controllers to ensure they have an escape route at all times and wear appropriate PPE

6) Minimum lane width of 3.2m to be maintained at all times

7) Cone spacing’s to comply with TCAWS table 5.1, taper lengths to comply with TCAWS table 5.2

8) Minimum width of 1.2m shall be maintained at all times for pedestrians to pass unhindered

9) All signs to be duplicated on both sides of road wherever safe practical to do so

10) High Speed Road - TMA and Advance Warning Vehicle required

11) 40 km/h road work speed limit can only be implemented short term for intermittent stoppages or when workers are working within 1.2 metres from live traffic.

**One Lane Work Zone Key**

Work zone can be set up on either side of road as illustrated here. Cone spacings per TCAWS Table 5.1, taper lengths per TCAWS Table 5.2

---

**Buffer**

Buffer

80 m

80 m

PREPARE TO STOP

40 ROADWORK AHEAD

60 m

60 m

60 m

60 m

PREPARE TO STOP

40 ROADWORK

---

**Early works - Surveying, potholing, geotechnical investigation, cleaning & grubbing, fencing**

Note: In early works barrier placement would not be carried out

---

**TCP Designed Date:**

27.8.18

**TCP Expire Date:**

27.8.20

---

TCP IS NOT TO SCALE

Designed by: M. Jones

Cert. No: 0033239253

Calc. No: 0033239253

Signature:
Generic Shoulder Closure

1) This Traffic control plan is for works on The Northern Road Stage 4

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10) High Speed Road - TMA and Advance Warning Vehicle required

11) 40 km/h road work speed limit can only be implemented short term for intermittent stoppages or when workers are working within 1.2 metres from live traffic.

Set up signs on approach to works as illustrated below Dm (posted speed limit expressed in metres)

Shoulder Closure
Work Zone Key

Work zone can be set up on either side of road as illustrated here. Cone spacings per TCAWS Table 5.1, Taper lengths per TCAWS Table 5.2
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Early works - Surveying, potholing, geotechnical investigation, clearing & grubbing, fencing

Note: In early works barrier placement would not be carried out

Traffic Logistics do not accept responsibility of this traffic control plan if it is not implemented by Traffic Logistics Pty Ltd

TCP designed from TCWS Manual 4.0 & Australian Standard 1742.3

Traffic Logistics do not accept responsibility of this traffic control plan if it is not implemented by Traffic Logistics Pty Ltd

Email: info@traffic-logistics.com.au
Web: www.traffic-logistics.com.au
Phone: - 02 4271 4999
Syrdney - 02 4948 2200
Newcastle - 02 4940 0336

Client: Georgiou Ertech Joint Venture (GEJV)
Project: The Northern Road Stage 4
Top No: TLTCP AS-37989
REV: A
Scope Of Works: Early Works
Top(s) Used as a Guide: 84 + 57
Top Designed Date: 27.8.18
Top Expire Date: 27.8.20

TCP Designed Date:
Tcp Expire Date:

This TCP is to be setup and packed up by qualified traffic controllers with minimum current Implement Traffic Control ... TCP is to be made by qualified personnel. All modifica�ons to be signed off on this TCP along with cer�fica�on number

REV:

Implemented By
Cert No.:
Cert.
Name -
Signature:

This Traffic control plan is for works on The Northern Road Stage 4

The Northern Road

Early works - Surveying, potholing, geotechnical investigation, clearing & grubbing, fencing

Note: In early works barrier placement would not be carried out

Traffic Logistics do not accept responsibility of this traffic control plan if it is not implemented by Traffic Logistics Pty Ltd

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REV:

Implemented By
Cert No.:
Cert.
Name -
Signature:

This Traffic control plan is for works on The Northern Road Stage 4

The Northern Road

Early works - Surveying, potholing, geotechnical investigation, clearing & grubbing, fencing

Note: In early works barrier placement would not be carried out

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Tcp Expire Date:

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REV:

Implemented By
Cert No.:
Cert.
Name -
Signature:
Southern end works

1) This Traffic control plan is for works on The Northern Road Stage 4

2) Traffic Controllers to manage vehicles, pedestrians, and cyclists safely around work area

3) Traffic Controllers to only control one lane of traffic at any time. IE: one Traffic Controller required for each live lane of traffic

4) Traffic Controllers to be relieved every 2hrs when on stop/slow (or suitable change of duties as per TCAWS)

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11) 40 km/h road work speed limit can only be implemented short term for intermittent stoppages or when workers are working within 1.2 metres from live traffic.

Early works - Surveying, potholing, geotechnical investigation, clearing & grubbing, fencing

Note: In early works barrier placement would not be carried out
THE NORTHERN ROAD STAGE 4 UPGRADE
SITE VEHICLE MOVEMENT PLAN (VMP-001)

ELIZABETH DRIVE
BADGERYS CREEK ROAD
EATON ROAD
To Penrith
To Narellan

THE NORTHERN ROAD
GATE 3
GEJV SITE
COMPOUND
GATE 2
LEFT IN / LEFT OUT
GATE 1
LEFT IN / LEFT OUT
LEPPINGTON PASTORAL

CLINT: ROAD & MARITIME SERVICES
PROJECT: THE NORTHERN ROAD STAGE 4
TITLE: VEHICLE MOVEMENT PLAN (VMP-001)
EARLY WORKS AND SITE ESTABLISHMENTS
APPROX 75M SOUTH OF DYWER ROAD
UHF CHANNEL 30
SITE CONTACT: MARK 0438 173 842
SITE HOURS: 7AM TO 6PM
PPE REQUIREMENTS: LONG SLEEVES (REFLECTIVE), LONG PANTS, SAFETY BOOTS, HARD HAT