

REVIEW OF ENVIRONMENTAL FACTORS

**BERNERA ROAD UPGRADE, YARRAWA STREET TO
YARRUNGA STREET AND BERNERA
ROAD/YARRUNGA STREET/YATO ROAD
INTERSECTION UPGRADE
PRESTONS**

Document Control Sheet

Issue No.	Amendment	Date	Prepared By	Reviewed By
A	Early Draft to Council	16/02/2023	BSA	Council
B	Updated REF	21/06/2023	BJI	Council
C	Final REF	04/01/2024	BJI	Council

Limitations Statement

This report has been prepared in accordance with and for the purposes outlined in the scope of services agreed between ADW Johnson Pty Ltd and the Client. It has been prepared based on the information supplied by the Client, as well as investigation undertaken by ADW Johnson and the sub-consultants engaged by the Client for the project.

Unless otherwise specified in this report, information and advice received from external parties during the course of this project was not independently verified. However, any such information was, in our opinion, deemed to be current and relevant prior to its use. Whilst all reasonable skill, diligence and care have been taken to provide accurate information and appropriate recommendations, it is not warranted or guaranteed and no responsibility or liability for any information, opinion or commentary contained herein or for any consequences of its use will be accepted by ADW Johnson or by any person involved in the preparation of this assessment and report.

This document is solely for the use of the authorised recipient. It is not to be used or copied (either in whole or in part) for any other purpose other than that for which it has been prepared. ADW Johnson accepts no responsibility to any third party who may use or rely on this document or the information contained herein.

The Client should be aware that this report does not guarantee the approval of any application by any Council, Government agency or any other regulatory authority.

Table of Contents

EXECUTIVE SUMMARY	V
1.0 INTRODUCTION	1
1.1 PROPOSAL IDENTIFICATION	1
1.2 PURPOSE OF THE REPORT	5
2.0 PROPOSAL NEED AND JUSTIFICATION	7
2.1 BACKGROUND	7
2.2 OBJECTIVES OF THE PROPOSAL	7
2.2.1 Objectives	7
2.2.2 Performance Indicators	8
2.3 EXISTING ROAD AND INFRASTRUCTURE	8
2.4 OPTIONS CONSIDERED	9
2.4.1 Identified Options	9
2.4.2 Methodology for Selection of Preferred Option	10
2.5 PROJECT JUSTIFICATION	11
2.5.1 Mid-block Capacity	11
2.5.2 Road Safety Issue	11
2.5.3 Intersection Congestion	12
2.5.4 General Benefits to Local and Wider Community	12
3.0 DESCRIPTION OF THE PROPOSAL	13
3.1 SCOPE OF WORKS	13
3.1.1 The Proposal	13
3.1.2 Geometric Design	14
3.2 CONSTRUCTION ACTIVITIES	17
3.2.1 Work Methodology	17
3.2.2 Plant, Equipment and Contractors	19
3.3 TIMING AND STAGING	19
3.4 ENVIRONMENTAL MANAGEMENT PLAN – CONSTRUCTION PHASE ACTIVITIES	19
4.0 STATUTORY FRAMEWORK	20
4.1 RELATIONSHIP TO PLANNING BACKGROUND	20
4.1.1 Environmental Planning and Assessment Act	20
4.2 ENVIRONMENTAL PLANNING INSTRUMENTS	20
4.2.1 SEPP (Transport and Infrastructure) 2021	20
4.2.2 SEPP (Resilience and Hazards) 2021	21
4.2.3 SEPP (Biodiversity and Conservation) 2021	22
4.2.4 SEPP (Planning Systems) 2021	22
4.2.5 Liverpool Local Environmental Plan (LEP) 2008	22
4.3 NSW & COMMONWEALTH LEGISLATION	23
4.3.1 Commonwealth Environmental Protection and Biodiversity Conservation Act 1999	23
4.3.2 Biodiversity Conservation Act 2016	25
4.3.3 National Parks and Wildlife Act 1974	25
4.3.4 Heritage Act 1977	26
4.3.5 Fisheries Management Act 1994	26
4.3.6 Water Management Act 2000	26
4.3.7 Protection of the Environment Operations Act 1997	27
4.3.8 Roads Act 1993	28
4.3.9 Waste Avoidance & Resource Recovery Act 2001	28
4.3.10 Crown Lands Act 1989	29

4.3.11	<i>Biosecurity Act 2015</i>	29
5.0	STAKEHOLDER AND COMMUNITY CONSULTATION	30
5.1	COMMUNITY CONSULTATION	30
5.1.1	<i>Adjoining and/or Affected Landholders</i>	30
5.1.2	<i>Local Aboriginal Communities</i>	30
5.1.3	<i>The General Community</i>	30
5.2	GOVERNMENT AGENCY & STAKEHOLDER CONSULTATION	30
5.2.1	<i>SEPP (T&H) 2021 Section 2.10-2.14 Consultation with Council</i>	30
5.2.2	<i>SEPP (T&I) 2021 Section 2.15 - Consultation with Authorities other than Council</i>	31
5.2.3	<i>Consultation Beyond SEPP (T&I) 2021</i>	32
6.0	CONSIDERATION OF ENVIRONMENTAL FACTORS	33
6.1	LAND USES & SERVICES	33
6.1.1	<i>Existing Environment</i>	33
6.1.2	<i>Impact Assessment</i>	33
6.1.3	<i>Safeguards</i>	33
6.2	SOILS & GEOLOGY	34
6.2.1	<i>Existing Environment</i>	34
6.2.2	<i>Impact Assessment</i>	34
6.2.3	<i>Safeguards</i>	35
6.3	HYDROLOGY, FLOODING & WATER	35
6.3.1	<i>Existing Environment</i>	35
6.3.2	<i>Impact Assessment</i>	36
6.3.3	<i>Safeguards</i>	37
6.4	BIODIVERSITY	37
6.4.1	<i>Existing Environment</i>	37
6.4.2	<i>Impact Assessment</i>	38
6.4.3	<i>Safeguards</i>	38
6.5	NOISE & VIBRATION	38
6.5.1	<i>Existing Environment</i>	38
6.5.2	<i>Impact Assessment</i>	39
6.5.3	<i>Safeguards</i>	40
6.6	AIR QUALITY & ENERGY	42
6.6.1	<i>Existing Environment</i>	42
6.6.2	<i>Impact Assessment</i>	42
6.6.3	<i>Safeguards</i>	43
6.7	NON-ABORIGINAL HERITAGE	44
6.7.1	<i>Existing Environment</i>	44
6.7.2	<i>Impact Assessment</i>	44
6.7.3	<i>Safeguards</i>	44
6.8	ABORIGINAL HERITAGE	44
6.8.1	<i>Existing Environment</i>	44
6.8.2	<i>Impact Assessment</i>	44
6.8.3	<i>Mitigation Measures</i>	44
6.9	VISUAL AMENITY	45
6.9.1	<i>Existing Environment</i>	45
6.9.2	<i>Impact Assessment</i>	45
6.9.3	<i>Mitigation Measures</i>	45
6.10	TRAFFIC & ACCESS	45
6.10.1	<i>Existing Environment</i>	45
6.10.2	<i>Impact Assessment</i>	46
6.10.3	<i>Mitigation Measures</i>	46
6.11	WASTE GENERATION	47
6.11.1	<i>Existing Environment</i>	47
6.11.2	<i>Impact Assessment</i>	47

6.11.3	<i>Mitigation Measures</i>	47
6.12	SOCIO-ECONOMIC SETTING	48
6.12.1	<i>Existing Environment</i>	48
6.12.2	<i>Impact Assessment</i>	48
6.12.3	<i>Mitigation Measures</i>	48
6.13	CUMULATIVE IMPACTS	48
7.0	SUMMARY OF SAFEGUARDS	49
8.0	CONCLUSION	59
8.1	SUMMARY OF BENEFICIAL EFFECTS	59
8.2	SUMMARY OF ADVERSE EFFECTS	59
8.3	SUMMARY	60
9.0	DECLARATION	61

APPENDICES

Appendix 1	Proposed Bernera Road Upgrade Works
Appendix 2	Section 171 Assessment
Appendix 3	Aboriginal Due Diligence Assessment
Appendix 4	Construction and Vibration Assessment
Appendix 5	EPBC Act Protected Matters Report

Executive Summary

Liverpool City Council (Council) has commissioned ADW Johnson (ADWJ) to undertake this Review of Environmental Factors (REF) to investigate any potential environmental impacts associated with the construction and operation of Bernera Road upgrade, between Yarrowa Street and Kurrajong Road including upgrade of the Bernera Road/Yato Road/Yarrunga Street signalised intersection, Prestons.

The proposed upgrade works will be undertaken by Council and as such, Section 2.109 of *State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP(T&I))* provides that works can be carried out without consent. This REF has therefore been prepared in accordance with Sections 5.5 and 5.7 of the *Environmental Planning Assessment Act 1979 (EP&A Act)*, which requires Council, as a self-determining authority, to fully consider the potential environmental impacts of any proposed activities. This REF has also been prepared in accordance with Section 171 of the *Environmental Planning and Assessment Regulations 2021 (EP&A Regs)* which details elements to be considered when assessing the potential impact of an activity on the environment.

Having assessed the full suite of environmental issues that may be impacted by the proposal, key environmental risks identified were generally construction-based impacts such as traffic, soil and water degradation, noise and vibration. Given the nature of activity, there were no significant operational risks identified.

Where potential environmental impacts have been identified, mitigation measures have been developed to minimise or remove the extent of impact. These mitigation measures would be further detailed in a Construction Environmental Management Plan (CEMP). Methods for implementing and monitoring these measures would be included in these plans.

Subject to the implementation of identified mitigation measures, it is considered that the construction and operation of the proposed transport upgrade works are unlikely to significantly impact on the environment. With this in mind, an Environmental Impact Statement (EIS) is not required and this REF is an adequate level of impact assessment for this project.

1.0 Introduction

Liverpool City Council (Council) has commissioned ADW Johnson (ADWJ) to undertake this Review of Environmental Factors (REF) to investigate any potential environmental impacts associated with the construction and operation of Bernera Road upgrade, between Yarrowa Street and Kurrajong Road including upgrade of the Bernera Road/Yato Road/Yarrunga Street signalised intersection, Prestons.

The proposed upgrade works will be undertaken by Council and as such, Section 2.109 of *State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP(T&I))* provides that works can be carried out without consent. This REF has therefore been prepared in accordance with Sections 5.5 and 5.7 of the *Environmental Planning Assessment Act 1979 (EP&A Act)*, which requires Council, as a self-determining authority, to fully consider the potential environmental impacts of any proposed activities. This REF has also been prepared in accordance with Section 171 of the *Environmental Planning and Assessment Regulations 2021 (EP&A Regs)* which details elements to be considered when assessing the potential impact of an activity on the environment.

1.1 PROPOSAL IDENTIFICATION

Benera Road is a regional road under the control of Council which operates as a designated heavy vehicle route providing access to the Prestons Industrial Area as well as residential suburbs along both sides of the road and Westlink M7 Motorway. It links the State Roads of Camden Valley Way and Hoxton Park Road, and Campbelltown Road through Soldiers Parade, Edmondson Park.

The Bernera Road section between Yarrowa Street and Yato Road is currently a two (2) lane road and experiences traffic congestion, particularly during the morning and afternoon peak periods. In addition, the existing signalised intersection at Bernera Road/Yato Road/Yarrunga Street intersection does not have dedicated right turn bays and also experiences traffic congestion and road safety concerns. To reduce traffic conflicts with right turning vehicles, central median is also proposed in the entire Bernera Road section between Yarrowa Street and Kurrajong Road including minor modifications to the existing signalised intersection at Kurrajong Road and Bernera Road, Prestons.

Consequently, Council has submitted and secured Federal Government funding to upgrade approximately 300m of Bernera Road section between Yarrowa Street and Yarrunga Street/Yato Road. In addition, Council is collecting developer contributions and has signed voluntary planning agreements with a number of developers to fund the upgrade of the Bernera Road/Yarrunga Street/Yato Road signalised intersection, to improve traffic efficiency and road safety.

A locality map showing the project location is indicated below.

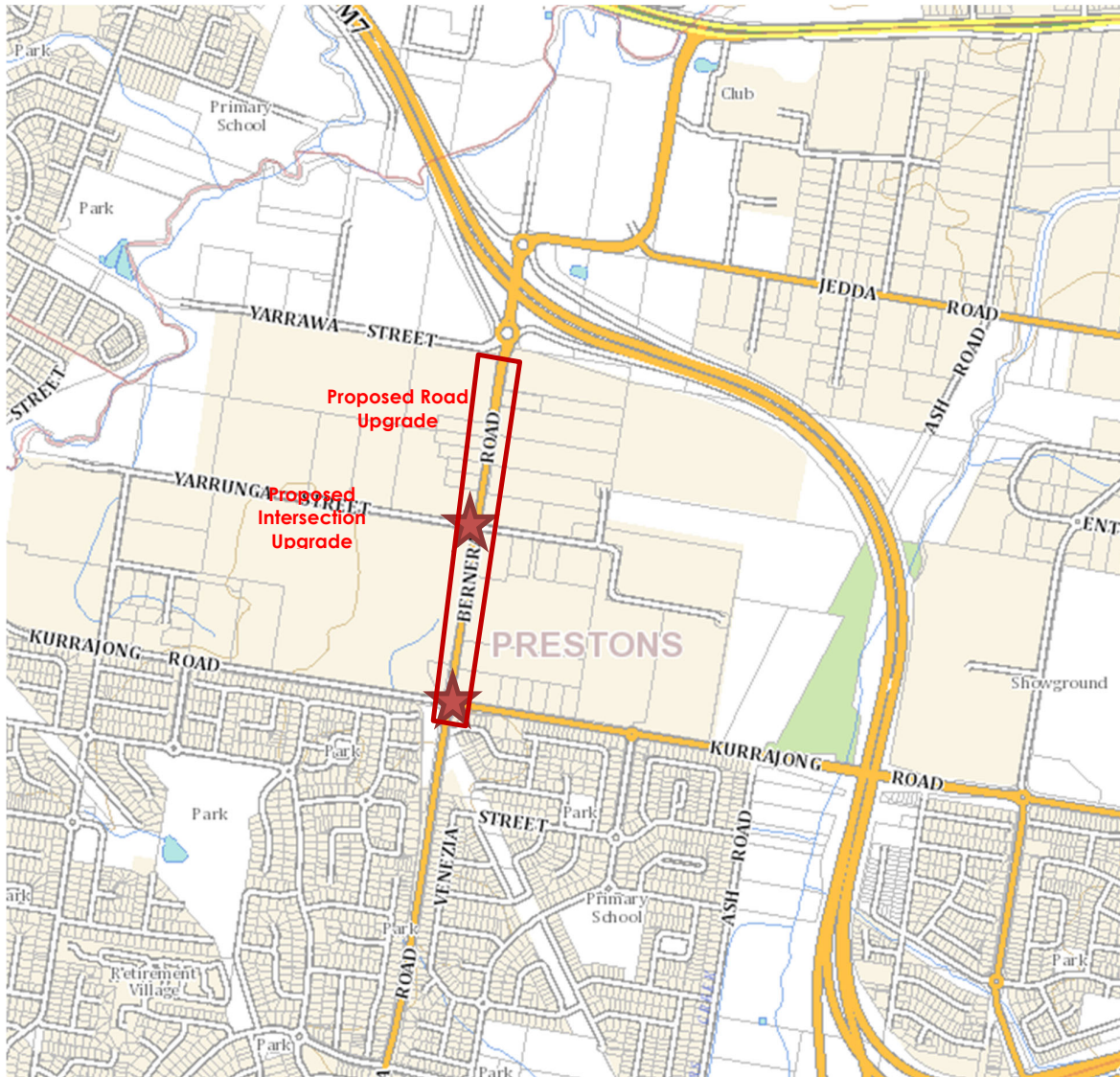


Figure 1.1: Locality Map showing the Project Location

The geographical location of the project is:

Item	Road Name	Road Section		Latitude	Longitude
1	Bernera Road	Yarrowa Street to 23 Bernera Street	Start	-33.934550	150.868802
			End	-33.936895	150.868394
2	Bernera Road	Intersection with Yarrunga Street and Yato Road	At the intersection	-33.938466	150.868126
3	Bernera Road	Between Yarrunga Street/Yato Road and Kurrajong Road signalised intersections	Start	-33.938466	150.868126
			End	-33.942222	150.867360

This REF details the works required to undertake the proposed works and explores all potential environmental impacts and indicates measures to minimise these impacts.

This report should be read in conjunction with the Detailed Design Plans, refer **Appendix 1**.

The major elements of the Bernera Road upgrade includes:

- Road and drainage upgrade works along Bernera Road from the roundabout at its intersection with Yarrowa Street and the Westlink M7 Motorway off ramp, to the front of 23 Bernera Road, including:
 - Approximately 300m south, as a continuation of the existing four-lane divided road close to the Yarrowa Street and M7 Motorway off ramp;
 - Installation of concrete median island and kerb and guttering;
 - Installation of a shared path along the western side and missing footpath links on the eastern side;
 - Pavement reconstruction;
 - Associated utilities relocation;
 - Signs and line markings.
- Bernera Road/Yarrunga Street/Yato Road intersection upgrade:
 - Road widening to provide a combined left and through lane, a through lane and dedicated right turn lanes in the Bernera Road approaches;
 - Localised road widening along Yato Road/Yarrunga Street approaches, to provide dedicated right turn lanes and combined left and through lane;
 - Installation of concrete median island and kerb and guttering;
 - Installation of a shared path along the western side and missing footpath links on the eastern side;
 - Pavement reconstruction;
 - Associated utilities relocation;
 - Signs and line markings.
- Bernera Road section between Bernera Road/Yarrunga Street/Yato Road and Bernera Road/Kurrajong Road intersections and upgrade of the Bernera Road/Kurrajong Road signalised intersection at Prestons:
 - Installation of concrete median island;
 - Installation of a shared path along the western side;
 - Signs and line markings.

The location of these works are indicated in Figures 1.1 and 1.2A to 1.2C.

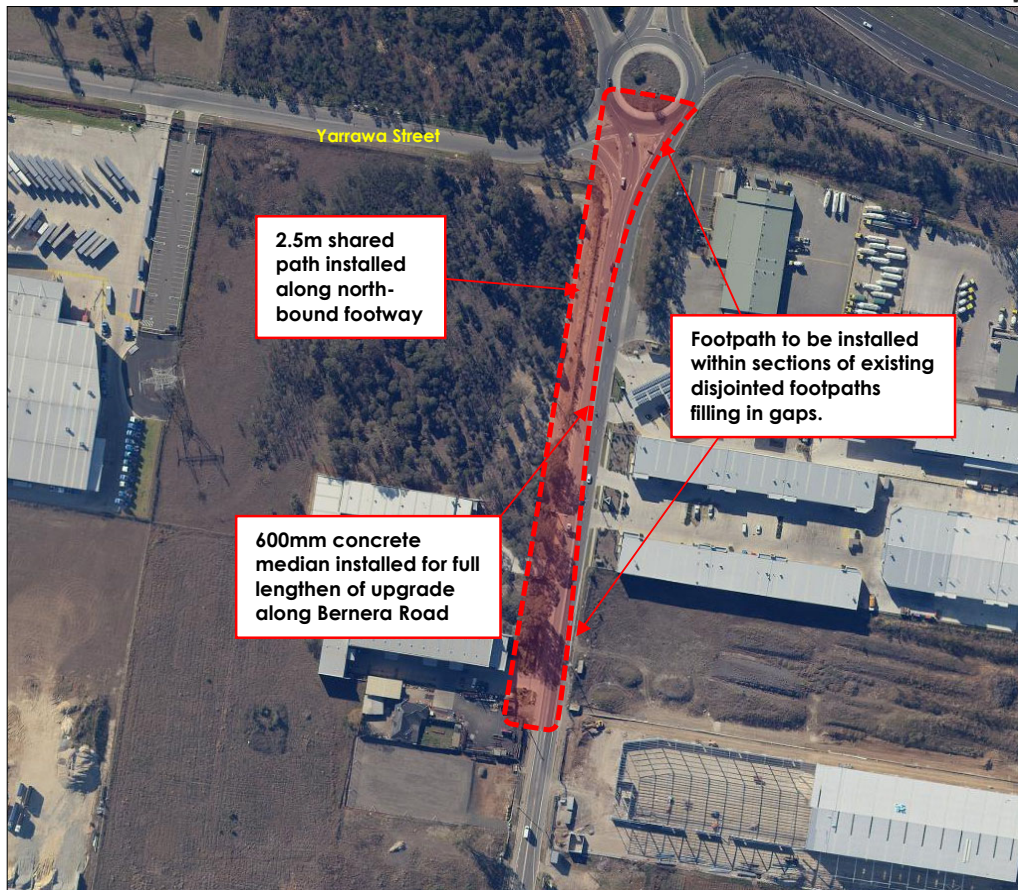


Figure 1.2A: Existing Bernera Road Layout showing Proposed Road Upgrades

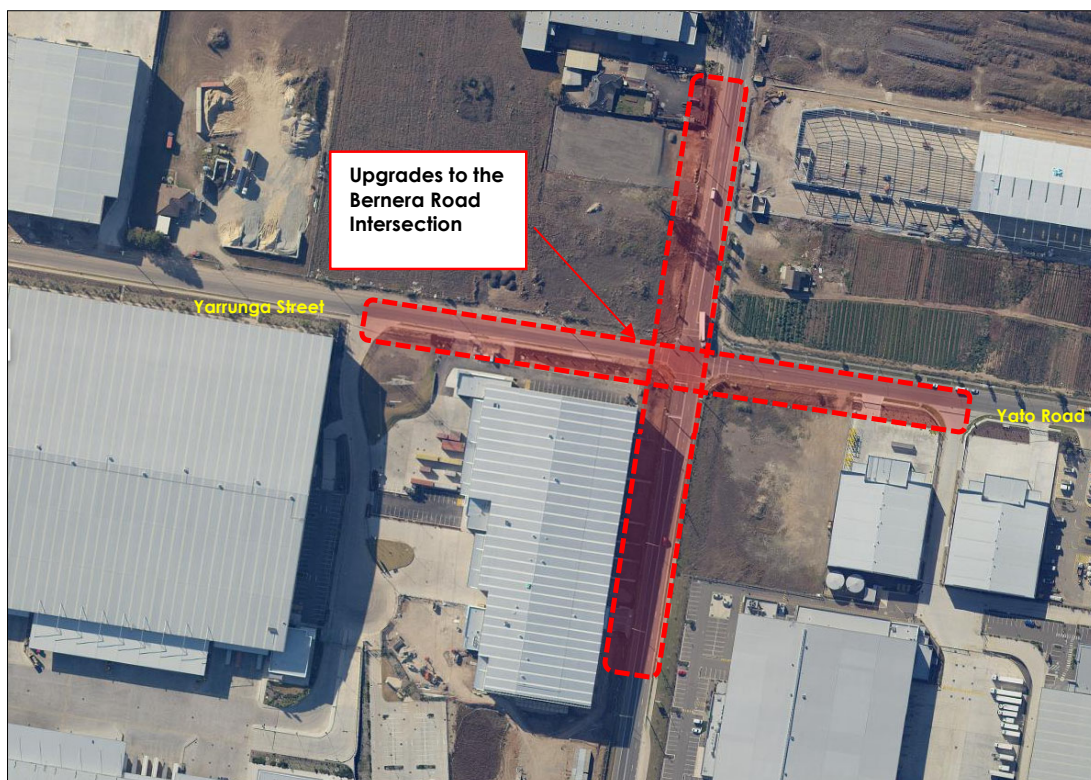


Figure 1.2B: Existing Bernera Road Intersection Layout showing Proposed Intersection Upgrades



Figure 1.2C: Existing Bernera Road showing Proposed Road and Intersection Upgrades

1.2 PURPOSE OF THE REPORT

This REF has been prepared for Council, who is the determining authority in accordance with Division 5.1 of the EP&A Act.

The purpose of the REF is to describe the proposal, to document likely impacts on the environment, and to list remedial measures to minimise impact on the environment.

The description of the proposed works and associated environmental impacts have been undertaken in context of Clause 171 of the EP&A Regs, the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of Section 5.5 of the EP&A Act to ensure that Council examines and takes into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF has considered:

- Whether the proposal is likely to have a significant impact on the environment and therefore necessitate an EIS to be prepared and approval to be sought from the Minister for Planning and Infrastructure under Division 5.1 of the EP&A Act;
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in Section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement (“SIS”); and
- The potential for the proposal to significantly impact a matter of national environmental significance or Commonwealth land and the need to make a referral to the Department of Agriculture, Water and the Environment for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

The overall objective of this report is to provide Council with information to the fullest extent possible of all matters affecting or likely to affect the environment by the construction and operation of the Bernera Road upgrade works.

2.0 Proposal Need and Justification

2.1 BACKGROUND

The project involves upgrade of a section of Bernera Road between Yarrowa Street and Yarrunga Street/Yato Road and upgrade of the existing Bernera Road/Yato Road/Yarrunga Street signalised intersection. The upgrade will be carried out in two (2) stages, starting with the upgrade of the Bernera Road section followed by the intersection upgrade.

The M7 Motorway is part of the National Land Transport Network and the Western Sydney Road Network with Bernera Road being a key distributor and regional road under the control of Council. It connects the M7 Motorway to a portion of the south-west Sydney Road network with connections to the south through Camden Valley Way and Campbelltown Road via Soldiers Parade, Edmondson Park and connections to the north through Jedda/Joadja Road to Hoxton Park Road.

The Bernera Road section between Yarrowa Street and Yarrunga Street/Yato Road is currently a two (2) lane road and experiences traffic congestion particularly during the morning and afternoon peak periods. In addition, the existing signalised intersection at Bernera Road/Yato Road/Yarrunga Street intersection does not have dedicated right turn bays and also experiences traffic congestion and road safety concerns.

It is expected that road freight movements will significantly increase as a result of the operations of Moorebank Intermodal Terminal and the Western Sydney Aerotropolis (WSA) as well as industrial and warehousing developments in the Liverpool LGA which will become significant employment hubs. The project will improve freight network and route connection in south-west Sydney.

Council has been receiving representations that the section of Bernera Road between Yarrowa Street and Kurrajong Road is experiencing delays, has no kerb and guttering along the western side and the carriageway configuration does not permit the required four (4) lane divided road. The project has been nominated to address this deficiency.

Consequently, Council has submitted and secured Federal Government funding to upgrade the Bernera Road section between Yarrowa Street and Kurrajong Road. In addition, Council is collecting developer contributions and has signed voluntary planning agreements with adjoining developers to fund the upgrade of the Bernera Road/Yarrunga Street/Yato Road intersection, to improve traffic efficiency and road safety.

The Bernera Road section between Yarrowa Street and Kurrajong Road upgrade will provide approximately \$265M in economic benefits with improved traffic efficiency, reduced vehicular related accidents and environmental benefits.

The project will help stimulate the local economy by providing employment to construction industry in current unprecedented global economic crisis. The project will support an estimated 30 full time equivalent direct and indirect annual jobs nationally.

2.2 OBJECTIVES OF THE PROPOSAL

2.2.1 Objectives

The key objectives of the project are to:

- Reduce traffic congestion and delays, improve traffic flow and travel times for freight and regional traffic movements;

- Reduce vehicle related accidents to provide improved road safety for road users and reduce the community cost of road trauma associated with injury;
- Increase road network capacity between Kurrajong Road and the M7 Motorway.

The key benefit of the project will improve freight connection between the Prestons Industrial Precinct to the adjoining road network and hence, to the planned WSA and the aerotropolis as well as access for local residents travelling to/from the airport and the employment precincts within the aerotropolis.

2.2.2 Performance Indicators

The following performance indicators includes the following:

- Improve traffic flow on the section of Bernera Road between Yarrowa Street and Yarrunga Street/Yato Road, Prestons by upgrading the road section from two (2) lanes to four (4) lanes.
- Improve intersection performance of the Bernera Road/Yato Road/Yarrunga Street intersection from LoS E to LoS A in the AM peak and LoS C to Los B in the PM peak by providing additional lanes to Bernera Road.
- Increase the effective intersection capacity of Bernera Road/Yato Road/Yarrunga Street in the AM by 110% and 32% in the PM.
- Reduce delays at the Bernera Road/Yato Road/Yarrunga Street intersection in the AM from 77 seconds AM to nine (9) seconds and in the PM from 22 seconds to 14 seconds which represents a reduction in delays of 88% in the AM and 35% PM peaks.
- Modelling shows that the practical capacity of the existing intersection has been greatly exceeded in both the AM peaks with the degree of saturation of 1.2 (AM). The upgrade increases capacity with the degree of saturation reducing to 0.584 in the AM peak.

2.3 EXISTING ROAD AND INFRASTRUCTURE

Bernera Road between Yarrowa Street and Yato Road/Yarrunga Street is generally a two (2) lane road with a single traffic lane in each direction. The carriageway width is slightly wider than two (2) traffic lanes, but is line marked effectively to operate with a single traffic lane in each direction.

This road section has two (2) varying carriageways, as indicated below.

Bernera Road (Northern Portion)

The northern portion of Bernera Road from the intersection from Yarrowa Street to 23 Bernera Road, has a 12.6m wide carriageway, which is line marked to operate with a single lane in each direction and 2.4m and 2.9m road shoulders along the eastern and western sides respectively.

It has no parking restriction, and previously had a narrow central median island.

The intersection of Yarrowa Street and Westlink M7 Motorway on and off ramp is controlled by a dual lane roundabout.

Bernera Road (Southern Portion)

The southern portion of Bernera Road from 23 Bernera Road to the Yarrunga Street/Yato Road intersection has two (2) varying carriageway widths.

The southern portion has a carriageway width of approximately 12.9m and line marked to operate with a single traffic lane and sealed road shoulders.

The section further south, close to the signalised intersection has a carriageway width of approximately 13.4m, line marked to operate with two traffic lanes in each direction.

A left-turn deceleration lane has recently been constructed as part of a development at 24 Bernera Road. This road section has *No Stopping* parking restrictions on both sides of the road.

As indicated above, the Bernera Road/Yarrunga Street/Yato Road intersection is a signalised intersection with two (2) traffic lanes along Bernera Road, a single lane along the Yarrunga Street approach, and two (2) lanes made up of a dedicated right turn lane and combined left and through lane along Yato Road.

Benera Road (between Yarrunga Street/Yato Road and Kurrajong Road Intersections)

The portion of Bernera Road between Yarrunga Street/Yato Road and Kurrajong Road intersections has existing two (2) lanes in each direction. This section has a carriageway width of approximately 12.9m and line marked to operate with two (2) traffic lanes in each direction.

Left-turn deceleration lanes have been constructed as part of developments at 1 Yato Road and 42 Bernera Road. This road section has *No Stopping* parking restrictions on both sides of the road.

As indicated above, the Bernera Road and Kurrajong Road intersection is a signalised intersection with existing two (2) through traffic lanes and dedicated right turn lanes in all directions. The intersection has signalised shared paths across Bernera Road on the southern side and across Kurrajong Road on the eastern side.

Yarrunga Street

Yarrunga Street has a carriageway width of approximately 10.2m, line marked to operate with a single traffic lane in each direction. It has *No Stopping* restriction signs along the section close to the signalised intersection.

A 1.5m footpath has recently been installed along the northern side, close to Bernera Road. In addition, there is a 1.5m paved footpath along the southern side away from Bernera Road.

Yato Road

Yato Road has a carriageway width of approximately 12.8m, line marked to operate with a single traffic lane in each direction. It has *No Stopping* restriction signs along the section close to the signalised intersection. The road section on the approach to Bernera Road has two (2) lanes made up of a dedicated right turn lane and combined left and through lane along Yato Road. There is a 1.2m paved footpath along the northern side away from Bernera Road.

2.4 OPTIONS CONSIDERED

2.4.1 Identified Options

Options considered for the proposed works are summarised overleaf:

Upgrade Option	Upgrade Option Description
<p>'Minor' Option (Chosen)</p>	<ul style="list-style-type: none"> • Road and drainage upgrade works along Bernera Road from the roundabout at the intersection of Yarrowa Street and the Westlink M7 Motorway off ramp, to the front of 23 Bernera Road, including: <ul style="list-style-type: none"> • Approximately 300m south, as a continuation of the existing four (4) lane divided road close to the Yarrowa Street and M7 Motorway off ramp; • Installation of concrete median island and kerb and guttering; • Installation of a shared path along the western side and footpath along the eastern side; • Line marking and signage. • Bernera Road/Yarrunga Street/Yato Road intersection upgrade: <ul style="list-style-type: none"> • Road widening to provide a combined left and through lane, a through lane and dedicated right turn lanes in the Bernera Road approaches; • Localised road widening along Yato Road/Yarrunga Street approaches, to provide dedicated right turn lanes and combined left and through lane; • Installation of concrete median island and kerb and guttering; • Installation of a shared path along the western side and footpath along the eastern side; • Pavement reconstruction; • Associated utilities relocation; • Line marking and signage.
<p>'Do Nothing' Option</p>	<p>A “do-nothing” option has been considered; however, no benefits are gained with this option. The community, including members of parliament, have been requesting for road capacity increase and intersection upgrade.</p> <p>Without the improvement, delays along the road section and at the intersection would not be addressed. Hence the “do-nothing” option is not considered an appropriate option.</p>

2.4.2 Methodology for Selection of Preferred Option

The method used in the project selection includes road capacity analysis, including the use of SIDRA Intersection Performance Analysis and Crash Data Analysis carried out as part of Council’s improvement strategy to improve road capacity along Bernera Road and upgrade the intersection.

The above investigations have identified that capacity of the existing two (2) lane road section has been exceeded resulting in unacceptable level of service and traffic delays.

In addition, the signalised intersection has no dedicated right turn lanes, experiences significant delays and Council has been receiving representations to improve road safety at the intersection.

Bernera Road also attracts heavy vehicle movements which increases the passenger vehicle units along the road, which leads to additional delays.

To address the above concerns, Council is proposing to carry out road widening and upgrade the signalised intersection.

A 'Do Nothing' option would not address the abovementioned deficiencies and the traffic delays, and road safety concerns would continue. Hence, the 'Do Nothing' option is not considered an acceptable solution.

The selected improvement option involving the mid-block road widening and upgrades to a signalised intersection, would address the above-mentioned deficiencies.

2.5 PROJECT JUSTIFICATION

Council has progressively been upgrading Bernera Road to a four (4) lane divided road. The southern section between Camden Valley Way and Kurrajong Road was upgraded over 10 years ago and the section further south between Camden Valley Way and Soldiers Parade was upgraded four (4) years ago.

The remaining section that has not been upgraded is the section between Kurrajong Road to Yurranga Street. The current project as well as the Bernera Road/Yato Road intersection upgrade would include this road section.

The project justification includes the following:

- Increase road network capacity at the signalised intersection by providing dedicated right turn lanes to reduce congestion and improve road safety to accommodate increasing traffic movements;
- Reduce traffic congestion and delays, improve traffic flow and travel times for freight and regional traffic movements;
- Reduce crashes to provide improved road safety for road users and reduce the community cost of road trauma associated with injury crashes;
- Increase road capacity to facilitate the increasing developments in the Prestons Industrial Area.

The key benefit of the project will improve freight connection between the Prestons Industrial Precinct to the adjoining road network and to the planned WSA and the aerotropolis as well as access for local residents travelling to/from the airport and the employment precincts within the aerotropolis.

2.5.1 Mid-block Capacity

The section of Bernera Road between Yarrawa Street to Yarrunga Street/Yato Road has a single traffic lane in each direction. This section is carrying a peak hour traffic volume which exceeds the mid-block capacity.

2.5.2 Road Safety Issue

The TfNSW crash data for the five (5) year period between 2016 and 2020 indicates that there was a total of nine (9) crashes along this road section including eight (8) injury and one (1) tow away (non-injury) crash. The crashes are made up of the following.

Cross traffic	4 Nos.
Side Swipe	1 No.
Emerging from Driveway	1 No.
Loss of control	1 No.
Intersection Crash	1 No.
Unknown	1 No.

Five (5) of the above crashes were investigated by the police and the remaining four (4) were self-reported. Five (5) crashes were at the existing roundabouts and the remaining were mid-block crashes.

2.5.3 Intersection Congestion

As indicated above, the second stage of the project involves the Bernera Road/Yarrunga Street/Yato Road intersection upgrade. The existing intersection experiences traffic delays and intersection performance analysis has identified that the project will:

- Improve intersection performance of the Bernera Road/Yarrunga Street/Yato Road intersection from LoS E to LoS A in the AM peak and LoS C to LoS B in the PM peak by providing additional lanes in Bernera Road;
- Increase the effective intersection capacity of Bernera Road/Yarrunga Street/Yato Road in the AM by 110% and 32% in the PM;
- Reduce delays at the Bernera Road/Yarrunga Street/Yato Road intersection in the AM from 77 seconds AM to 9 seconds and in the PM from 22 seconds to 14 seconds which represents a reduction in delays of 88% in the AM and 35% PM peaks;
- The practical capacity of the existing intersection has been greatly exceeded in both the AM peaks with the degree of saturation of 1.2 (AM). The upgrade increases capacity with the degree of saturation reducing to 0.584 in the AM peak.

2.5.4 General Benefits to Local and Wider Community

The project would provide the following additional benefits to local and wider communities:

Traffic Improvement – The proposed road widening and intersection upgrades would increase road capacity, reduce right turn movement conflicts at the intersection and improve traffic efficiency/road safety.

Road Safety – The proposed traffic signal improvement would reduce traffic conflicts and improve road safety at the intersection.

Facilitate Economic Development – The project would enable and facilitate additional development in the Prestons Industrial Area.

3.0 Description of the Proposal

3.1 SCOPE OF WORKS

3.1.1 The Proposal

The upgrade works along Bernera Road will be undertaken in the following three (3) stages:

- Stage-1 Between Yarrawa Street and 23 Bernera Road;
- Stage-2 Between 23 Bernera Road and Yarrunga Street/Yato Road Intersection;
- Stage-3 between Yarrunga Street/Yato Road and Kurrajong Road intersections.

The scope of works includes the following:

Stage – 1 Bernera Road Upgrade

Road and drainage upgrade works along Bernera Road from the roundabout at its intersection with Yarrawa Street and the Westlink M7 Motorway off ramp, to the front of 23 Bernera Road, including:

- Approximately 300m south, as a continuation of the existing four (4) lane divided road close to the Yarrawa Street and M7 Motorway off ramp;
- Installation of concrete median island and kerb and guttering;
- Installation of a shared path along the western side and footpath along the eastern side;
- Upgrading the existing street lights;
- Associated utilities relocation;
- Line marking and signage;
- The existing signposted speed along Bernera Road will be maintained.

Stage – 2 Bernera Road/Yarrunga Street/Yato Road Intersection Upgrade

Bernera Road/Yarrunga Street/Yato Road intersection upgrade involves the following:

- Road widening to provide a combined left and through lane, a through lane and dedicated right turn lanes in the Bernera Road approaches;
- Localised road widening along Yato Road/Yarrunga Street approaches, to provide dedicated right turn lanes and combined left and through lane;
- Installation of concrete median island and kerb and guttering;
- Installation of a shared path along the western side and footpath along the eastern side;
- Pavement reconstruction;
- Associated utilities relocation;
- Relocation of existing overhead fixed VMS;
- Line marking and signage;
- The existing signposted speed along Bernera Road, Yarrunga Street and Yato Road, will be maintained.

Stage – 3 Bernera Road Upgrade, Yarrunga Street/Yato Road to Kurrajong Road and at Kurrajong Road Signalised INTERSECTION

The upgrade involves the following:

- Installation of concrete median island;
- Installation of a shared path along the western side and footpath along the eastern side;
- Providing shared path at the remaining two sides at Bernera Road and Kurrajong Road signalised intersection.

- Line marking and signage;
- The existing signposted speed along Bernera Road, Yarrunga Street and Yato Road, will be maintained.

Plans detailing the above are provided within **Appendix 1**.

3.1.2 Geometric Design

The following parameters have been adopted for proposed detailed design.

Stage 1

Horizontal Geometry

The works within this section of Bernera Road does not propose any horizontal curves or superelevation.

Cross Section

The cross-section geometry for this section of Bernera Road is shown below.

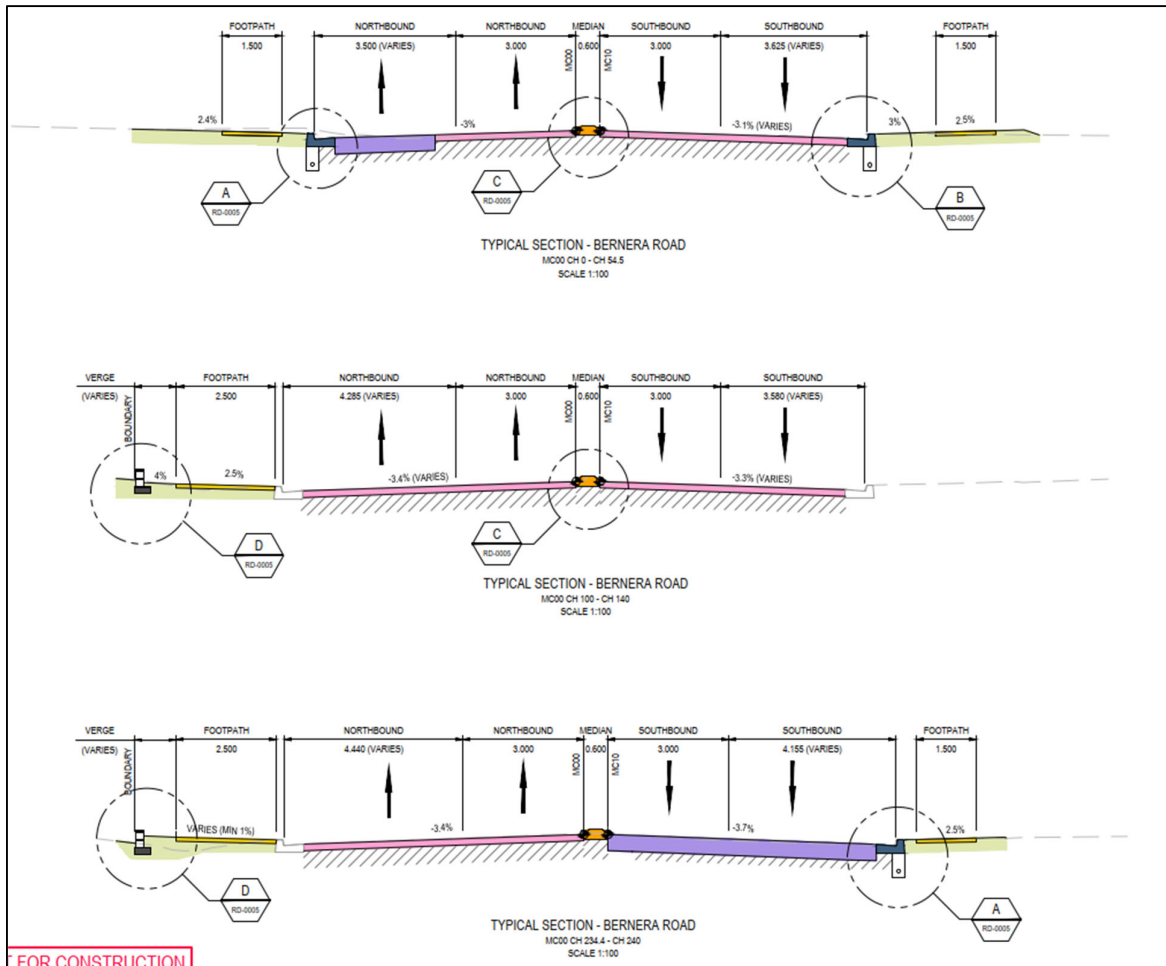


Figure 3.1: Proposed Typical Cross Sections – Stage 1 Bernera Road

Vertical Geometry

The vertical geometry of this section of Bernera Road has been designed to balance the crossfalls on the northbound and southbound carriageways and tie into the existing kerbs intended to be retained. The crossfalls vary from 2-4%.

Drainage

The existing subsurface network of stormwater pipes is proposed to be retained with only modifications to pits where surface levels have changed. Surface inlets are proposed to be modified to suit proposed kerb and gutter.

Provision for Cyclists

A 2.5m shared path has been proposed on the north-bound footway which will improve the safety for cyclists and provide active transport connectivity between employment zones in Prestons and Cartwright.

Provisions for Pedestrians

Pedestrian ramps and crossing facilities have been provided at the Yarrawa Street roundabout.

Signalised pedestrian crosswalks are included at the signalised intersection immediately south of the proposed limit of works on Bernera Road.

Stage 2

Cross Section

The cross-section geometry for this section of Bernera Road, Yato Road and Yarrunga Road are shown below.

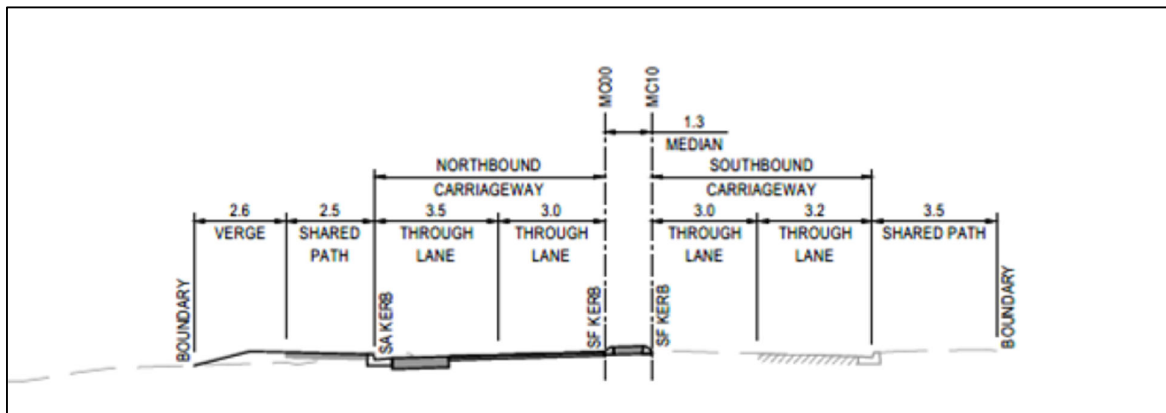


Figure 3.2: Proposed Typical Cross Section Bernera Road

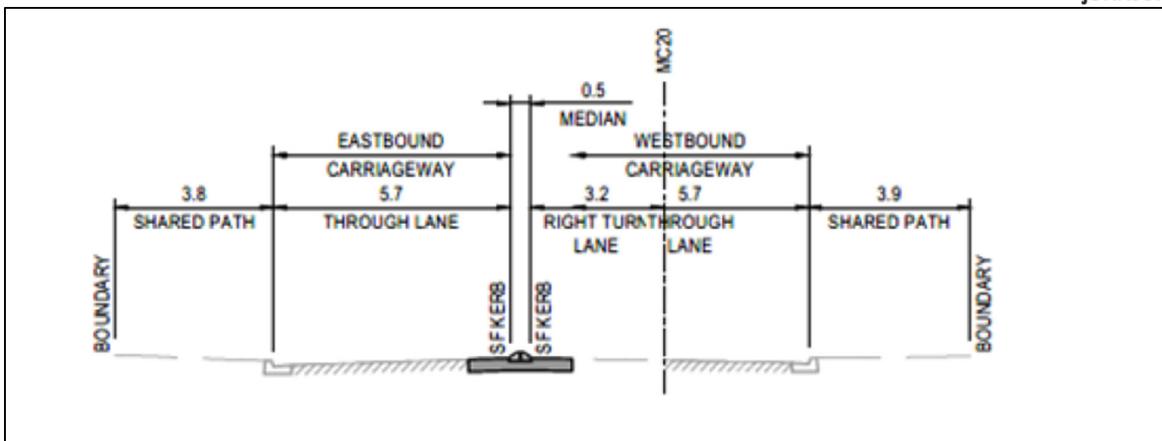


Figure 3.3: Proposed Typical Cross Section Yato Road

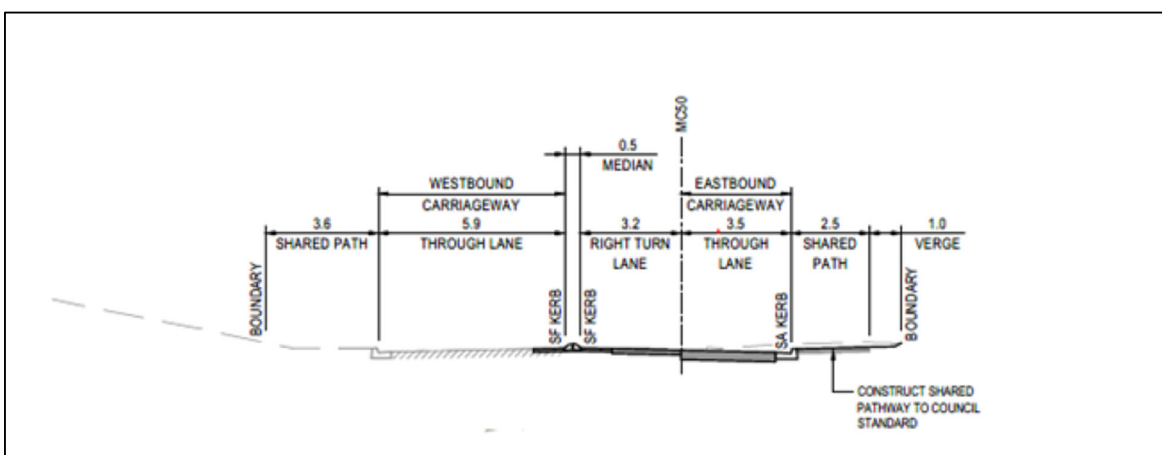


Figure 3.4: Proposed Typical Cross Section Yarrunga Street

Horizontal Geometry

The works within this section of Bernera Road, Yato Road and Yarrunga Street do not propose any horizontal curves or superelevation.

Vertical Geometry

The vertical geometry of Bernera Road generally maintains the existing vertical alignment.

The vertical alignment of Yarrunga Street has been raised to improve drainage of the intersection.

Yato Road has been designed to maintain the existing grade with the road grading away from Bernera Road and towards Burando Road.

Drainage

The existing subsurface network of stormwater pipes is proposed to be retained with only modifications to pits where surface levels have changed. Additional surface inlets are proposed that will utilise the existing drainage system to reduce gutter flow widths and avoid potential constructability issues with the 1050mm drainage pipe running beneath the kerb and gutter along the western side of Bernera Road.

Stage 3

Cross Section – The existing road cross-section geometry will be maintained.

Horizontal Geometry – The existing horizontal geometry will remain unaffected as additional road works are not proposed.

Vertical Geometry – The existing vertical geometry will remain unaffected as additional road works are not proposed.

Drainage – The existing drainage will remain unaffected as additional road works are not proposed.

Provision for Cyclists – Shared path for bicyclist along Bernera Road section and at the Kurrajong Road intersection will be provided.

Provisions for Pedestrians – Shared path on the western side and footpath on the eastern side will be provided.

3.2 CONSTRUCTION ACTIVITIES

3.2.1 Work Methodology

The overall construction would be undertaken in the following three (3) stages:

- **Stage 1 – Bernera Road Upgrade, Yarrowa Street to Yarrunga Street/Yato Road;**
- **Stage 2 – Bernera Road/Yarrunga Street/Yato Road Intersection Upgrade;**
- **Stage 3 – Bernera Road Upgrade, Yarrunga Street/Yato Road to Kurrajong Road including signalised intersection.**

The general work methodology for the above involves the following processes (listed in chronological order except where undertaken throughout the construction process):

- Detailed Design;
- Preparation and implementation of construction documents;
- Establish traffic control measures in accordance with a Traffic Management Plan (TMP);
- Installation of on-site environmental controls;
- Installation of work area on-site compound;
- Pavement, drainage and general concrete installation;
- Ongoing waste management;
- Remediate area in accordance with standard environmental safeguards.

Detailed Design

The detailed design has been undertaken in accordance with comments provided by Council and includes recommendations provided as part of this REF.

Preparation and Implementation of Construction Documents

Construction documents as recommended as part of this REF have been prepared and would be implemented as necessary.

Establish Traffic Control Measures in accordance with Traffic Management Plan (TMP)

The following control measures would be installed:

- Installation of temporary signage;
- Stop/go controls for construction vehicles;
- Concrete barriers and barrier boards;
- Temporary linemarking;

- Traffic speed lowered to 40km/h.

Further details with regards to the above would be provided within the TMP which would be prepared prior to construction commencing.

Installation of On-Site Environmental Controls

Construction of the proposed works would begin with the installation of on-site environmental controls such as erosion and sedimentation control measures in accordance with Council policies.

Installation of On-Site Compound

Installation of on-site compound requirements would be discussed with the construction agency after works are awarded.

Pavement and Asphalt Installation

- Pavement milling of the existing asphalt wearing course;
- Installation of concrete median kerb, including concrete infill;
- Construction of intermediate asphalt layers as required;
- Median island landscape planting;
- Construction of the final 50mm wearing course;
- Installation of shared paths.

Ongoing Waste Management

The site shall be kept in a clean and tidy order at all times, with contractors being educated as to the importance of recycling and waste reduction. Waste management protocols would be included within the Construction Environmental Management Plan (CEMP) which would be prepared prior to construction commencing but which would generally include:

- Promoting the use of recycled resources through the purchasing policy;
- Minimise use of packaging materials and recycle packaging products where possible;
- Waste concrete shall be sent to a concrete recycling plant where possible;
- Chemical and contaminated waste shall be disposed of through an approved and licensed facility;
- Any mulch or green waste containing weeds shall be stockpiled separately and appropriately disposed of;
- Office waste paper will be recycled and reused where possible;
- General waste that is not recyclable will be disposed of in a bin/skip provided by an approved waste disposal operator;
- All waste will be removed from site as applicable on completion of the project.

Remediate area in accordance with Standard Environmental Safeguards

Following completion of the proposed works, all temporary barriers, signage, work area compound and environmental control devices would be removed and any exposed areas will be stabilised.

The above provides a general explanation of the anticipated construction methodology, however this may be further refined during the construction planning phase.

3.2.2 Plant, Equipment and Contractors

The following typical plant and equipment would be expected to be used during construction:

- Rollers;
- Vibratory rollers;
- Compactors;
- Pavement mill;
- Asphalt paver;
- Excavator;
- Concrete trucks;
- Concrete pumps;
- Semi-trailers.

The breakdown above provides a basic list of the anticipated plant and equipment proposed to be used. It should be noted however, that this may be further refined during the construction planning phase.

3.3 TIMING AND STAGING

The Stage-1 commencement date for the proposed works is in the first quarter of 2024 and is expected to be completed in early 2025.

Stage-2 and Stage-3 works would be undertaken following availability of funds.

3.4 ENVIRONMENTAL MANAGEMENT PLAN – CONSTRUCTION PHASE ACTIVITIES

During construction, appropriate environmental safeguards would be implemented. A CEMP covering the construction phase would be prepared by the contractor prior to the commencement of construction.

All mitigation measures required prior to construction have been identified within Section 7 and would be addressed within the CEMP.

4.0 Statutory Framework

4.1 RELATIONSHIP TO PLANNING BACKGROUND

4.1.1 Environmental Planning and Assessment Act

As discussed above, the proposed REF will detail the works required to provide the Bernera Road upgrade. It will explore all potential environmental impacts and necessary safeguards as a consequence of these works.

The process of obtaining environmental planning approval is set out in the EP&A Act. Taking the above into consideration, the application of Section 2.109 of *State Environmental Planning Policy (Transport and Infrastructure) 2021* (SEPP (T&I)) (discussed below) characterises the proposed infrastructure works as “development permitted without consent”. This means that the project falls under Division 5.1 of the EP&A Act, rather than Division 4, as the works would be undertaken by Council as a public authority and the determining authority.

Division 5.1 of the EP&A Act establishes, under Section 5.5, a duty for determining authorities to “*examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity*” when determining if an activity should be undertaken.

5.5 Duty to Consider Environmental Impact

- (1) *For the purpose of attaining the objects of this Act relating to the protection and enhancement of the environment, a determining authority in its consideration of an activity shall, notwithstanding any other provisions of this Act or the provisions of any other Act or of any instrument made under this or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.*

This report has been prepared to assess the potential environmental impact of the infrastructure for the purposes of satisfying Council’s duty under Section 5.5 of the EP&A Act.

- (3) *Without limiting subsection (1), a determining authority shall consider the effect of an activity on any wilderness area (within the meaning of the [Wilderness Act 1987](#)) in the locality in which the activity is intended to be carried on.*

The infrastructure site is not located within any wilderness area.

In addition to the above, Section 171 of the EP&A Regs which details elements to be considered when assessing the potential impact of an activity on the environment has been provided within **Appendix 2**.

4.2 ENVIRONMENTAL PLANNING INSTRUMENTS

4.2.1 SEPP (Transport and Infrastructure) 2021

SEPP (T&I) aims to facilitate the effective delivery of infrastructure across the State.

Section 2.109 of the SEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

Section 2.109 states:

- (1) *Development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land.*

However, such development may be carried out without consent on land reserved under the *National Parks and Wildlife Act 1974* only if the development—

- (a) is authorised by or under the *National Parks and Wildlife Act 1974*, or
- (b) is, or is the subject of, an existing interest within the meaning of section 39 of that Act, or
- (c) is on land to which that Act applies over which an easement has been granted and is not contrary to the terms or nature of the easement.

As the works are for the upgrade to Bernera Road which is to be carried out by Council, it can be assessed under Division 5.1 of the EP&A Act and as such, development consent from Council is not required. Further, the proposed works are not located on land reserved under the *National Parks and Wildlife Act 1974*.

Part 2.2 of the SEPP (T&I) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by SEPP(T&I) (where applicable), is discussed in Section 5 of this REF.

4.2.2 SEPP (Resilience and Hazards) 2021

Chapter 2

Chapter 2 of SEPP (R&H) aims to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016. The SEPP applies to land within the coastal zone which includes coastal wetlands and littoral rainforests area, coastal vulnerability areas, coastal environment areas and coastal use areas. The location for works does not fall within any of these areas (see Figure 4.1).

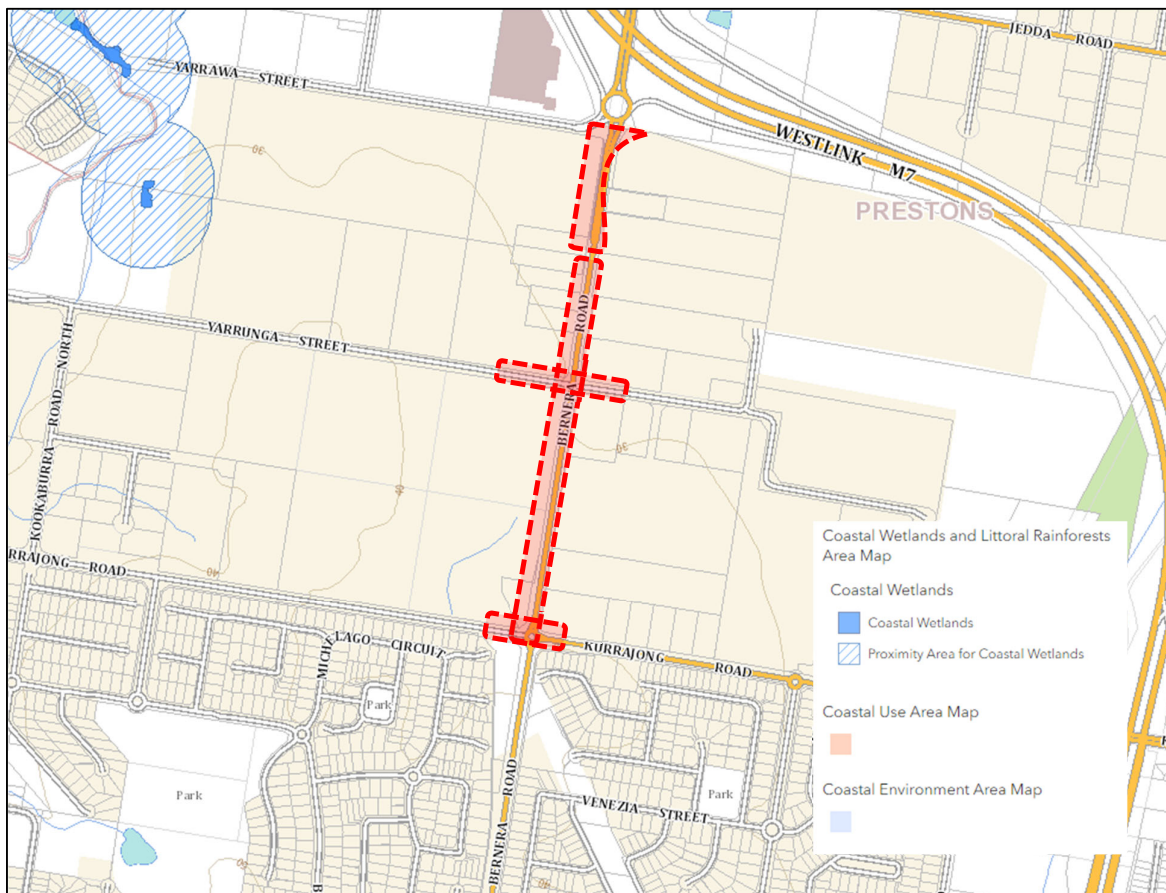


Figure 4.1: Coastal Zone Map

Chapter 4

Chapter 4 of the SEPP aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.

Due to the nature of the works proposed, they are not considered to be affected by contamination. Further, the site is not identified as being contaminated on the NSW Contaminated land register (see Figure 4.2).

[Home](#) [Public registers](#) [Contaminated land record of notices](#)

Search results

Your search for: LGA: LIVERPOOL CITY COUNCIL Matched 16 notices relating to 3 sites.

[Search Again](#) [Refine Search](#)

Suburb	Address	Site Name	Notices related to this site
CHIPPING NORTON	85-107 Alfred STREET	Former ACR	3 current and 1 former
DENHAM COURT	505 Campbelltown ROAD	Denham Court Caravan Park and Service Station	3 current
MOOREBANK	(a) 1 Bapaume ROAD	ABB Australia Pty Ltd	1 current and 8 former

Page 1 of 1 11 April 2023

Figure 4.2: EPA Contaminated Land Register

4.2.3 SEPP (Biodiversity and Conservation) 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021 commenced on 1 March 2022. This SEPP consolidated 11 other SEPPs within this SEPP on the 1 March 2022. *State Environmental Planning Policy (Koala Habitat Protection) 2021* (Koala SEPP) was one SEPP that was consolidated within SEPP (B&C) under Chapter 3 – Koala Habitat Protection 2020 and Chapter 4 – Koala Habitat Protection 2021. No policy changes were made as part of the consolidation nor did the legal effect of the existing SEPPs, with Section 30A of the Interpretation Act 1987 applying to the transferred provisions.

SEPP (Biodiversity and Conservation) 2021 does not apply to Part-5 activities. Therefore, no further assessment is required.

4.2.4 SEPP (Planning Systems) 2021

The proposed infrastructure does not constitute State Significant Development under this SEPP and as such, assessment against the provisions contained within this SEPP is not required.

4.2.5 Liverpool Local Environmental Plan (LEP) 2008

The upgrade works are located within the Bernera, Yarrunga and Yato Road reserves which are located upon E4 General Industrial, E5 Heavy Industrial zoned land and a small portion of SP2 Infrastructure zoned land. “Roads” are permissible with consent within all of these zones (see Figure 4.3).

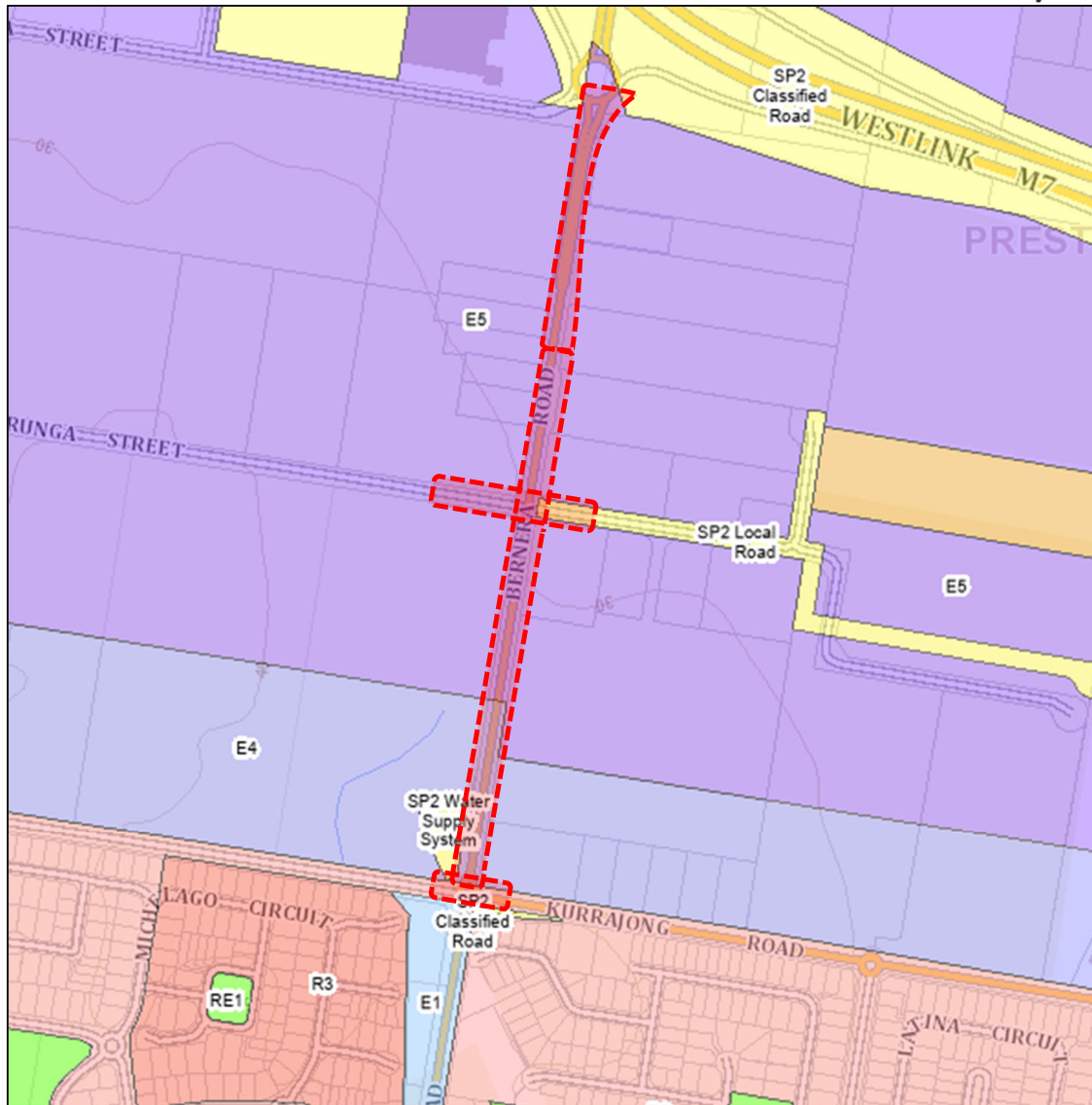


Figure 4.3: Zoning Map

Regardless of the zoning, Clause 5.12 is applicable and states:

5.12 Infrastructure development and use of existing buildings of the Crown

- (1) *This Plan does not restrict or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent, or that is exempt development, under State Environmental Planning Policy (Transport and Infrastructure) 2021, Chapter 2.*

Taking the above into consideration, the requirements of SEPP(T&I) are applicable to the proposed works.

4.3 NSW & COMMONWEALTH LEGISLATION

4.3.1 Commonwealth Environmental Protection and Biodiversity Conservation Act 1999

The Commonwealth EPBC Act is administered by the Department of Environment and Energy.

The EPBC Act focuses on Commonwealth interests on matters of national environmental significance such as:

- World Heritage Properties;
- National Heritage Places;
- RAMSAR Wetlands;
- National Threatened Species and Ecological Communities;
- Migratory Species;
- Nuclear Actions;
- Commonwealth Marine Areas;
- Great Barrier Reef; and
- Coal Seam Gas and Mining.

Assessments of significance are undertaken in accordance with the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (“NES”) to determine whether a proposed action is likely to have a significant impact on a matter of NES protected by the EPBC Act. If it is determined that the proposal would have a significant impact on a matter of NES, then the action must be referred to the Department of the Environment and Energy. Permits and applications need to also be made for activities which would affect any listed species or ecological community within a Commonwealth area.

The proposed infrastructure has been assessed with regards to its impact upon the above matters of NES as follows:

World Heritage Properties – The site is not a World National Heritage place, and is not in close proximity to any such area.

National Heritage Places – The site is not a national heritage place, and is not in close proximity to any such place.

Ramsar Wetlands – The proposed infrastructure is not located within nor is it close to Ramsar wetlands.

Great Barrier Reef – The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

Commonwealth Marine Areas – The site is not part of, or within close proximity to, any Commonwealth Marine Area.

Threatened Ecological Communities – 10 Threatened Ecological Communities are listed as potentially present within 5km of the site. Given the existing disturbed nature of the road reserve within which the proposed works are to occur, no threatened ecological communities listed under the EPBC Act are expected to be impacted by the proposal.

Threatened Species – 55 threatened fauna or flora listed under the EPBC Act are listed as potentially present within 5km of the site. Given the existing disturbed nature of the road reserve within which the proposed works are to occur, no threatened flora or fauna listed under the EPBC Act are expected to be impacted by the proposal. There is very limited potential to utilise the site as part of a broader foraging range.

Migratory Species – EPBC listed migratory species have very limited potential to utilise the vegetation present onsite and it is not considered that the development of this land as proposed is likely to significantly affect the availability of potential habitat for such mobile species, or disrupt migratory patterns.

Nuclear Actions – N/A

Coal Seam Gas and Mining – N/A

An EPBC Act Protected Matters Report was completed with regards to matters of NES, which is within **Appendix 5**.

Taking the above into consideration, the project is considered unlikely to have any significant impact on any matters of NES. With this in mind, the activity is not deemed to be a controlled action under the EPBC Act and a referral to the Department of the Environment and Energy is not considered necessary.

4.3.2 Biodiversity Conservation Act 2016

Section 7.2 of the BC Act states:

7.2 Development or activity “likely to significantly affect threatened species”

For the purposes of this Part, development or an activity is likely to significantly affect threatened species if—

- (a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or*
- (b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or*
- (c) it is carried out in a declared area of outstanding biodiversity value.*

To avoid doubt, subsection (1)(b) does not apply to development that is an activity subject to environmental impact assessment under Part 5 of the [Environmental Planning and Assessment Act 1979](#).

As discussed above, the proposed works would not require the removal of any trees.

Taking the above into consideration, the proposed works are unlikely to have a significant impact on threatened species in accordance with Section 7.2 (1)(a).

Further, the proposed works are not located within a declared area of outstanding biodiversity value pursuant to Section 7.2(1)(c).

In summary, the activity is unlikely to significantly affect threatened species pursuant to Section 7.2 of the BC Act.

4.3.3 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (“NPW Act”) is administered by the Office of Environment and Heritage (“OEH”) and is the primary legislation for the protection of Aboriginal cultural heritage in NSW.

In terms of Aboriginal heritage, the objects of the Act are:

- (1) The objects of this Act are as follows:*
 - (b) the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to:*
 - (i) places, objects and features of significance to Aboriginal people, and*

Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them. If harm to Aboriginal objects and places is anticipated, there is a requirement to apply for an Aboriginal Heritage Impact Permit (“AHIP”) under Sections 87 and 90 of the Act.

An Aboriginal Due Diligence Report was conducted by Apex Archaeology and concludes that there are no previously registered Aboriginal sites located within the study area and that no further Aboriginal archaeological assessment is required for the subject site. With this in mind, the proposed works would not require an AHIP under the NPW Act. A copy of the Aboriginal Due Diligence report has been provided within **Appendix 3**.

4.3.4 Heritage Act 1977

The *Heritage Act 1977* was introduced to conserve the environmental heritage of NSW. Environmental heritage is defined as including buildings, works, relics, or places which are of historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance to the state.

The site is not identified as containing or being adjacent a heritage item, nor as being located within a heritage conservation area.

4.3.5 Fisheries Management Act 1994

Threatened Species & Endangered Ecological Communities

Schedules 4, 4A and 5 of the FM Act contain lists of fish and marine vegetation species, ecological communities and populations which have been determined by the NSW Fisheries Scientific Committee as being under threat of serious decline that could ultimately lead to extinction. Section 221ZX of the FM Act requires that a SIS be prepared for an activity that is likely to significantly affect threatened species, populations or ecological communities or their habitats as listed under the FM Act.

No habitat for any of the threatened species, populations or communities listed under the Act are considered to be affected given the nature of the location for the proposed infrastructure works and as such a SIS is not required.

Key Threatening Processes (“KTP”)

Schedule 6 of the FM Act contains a list of KTPs, diseases and noxious fish and marine vegetation that have a negative impact on listed threatened species, populations and/ or communities.

No KTPs have the potential to affect the site as a consequence of the proposed infrastructure.

Taking the above into consideration, it is concluded that the proposed infrastructure would not significantly impact on threatened species, populations or ecological communities, or their habitats as listed under the FM Act and as such, a SIS is not required.

4.3.6 Water Management Act 2000

The *Water Management Act 2000* (“WMA”) provides for the integrated and sustainable management of NSW waters through the requirement for certain developments/activities to gain licenses/approvals including:

Chapter 3: Part 2 - Licenses

Water Access Licence

Water access licences (WALs) entitle licence holders to specified shares in the available water within a particular water management area and to take water at specified times, rates or circumstances from specified areas or locations.

As the proposed works generally involve the milling and re-sheeting of the existing pavement, there would be no requirement to obtain a WAL.

Chapter 3: Part 3 – Approvals

Controlled Activity

Section 91E of the WMA makes it unlawful for a person to carry out a controlled activity within waterfront land without a Control Activity Approval.

The proposed works would not include any works on waterfront land, with the nearest watercourse being over 1km to the west of Maxwells Creek and over 700m to the east of Cabramatta Creek.

Aquifer Interference

Section 91F of the WMA makes it unlawful for a person to carry aquifer interference activity without an aquifer interference approval.

As the proposed works generally involve the milling and re-sheeting of the existing pavement, there would be no aquifer interference.

4.3.7 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (“POEO Act”) establishes the NSW Environmental Regulatory Framework and determines whether an Environment Protection Licence (“EPL”) is needed for certain works.

The relevant objects of the Act are to:

- *Protect restore and enhance the quality of the environment in NSW, particularly with regard to ESD;*
- *Provide increased opportunities for community involvement;*
- *Ensure community access to information about pollution; and*
- *Reduce risk to human health and degradation of the environment.*

Chapter 3 of the POEO Act provides for a single licensing arrangement to replace the different licences and approvals that were required under separate Acts relating to air pollution, water pollution, noise pollution and waste management.

Schedule 1 of the POEO Act lists activities for which a licence is required and includes road construction as follows:

- 35 Road construction*
- (1) *This clause applies to road construction, meaning the following—*
 - (a) *the construction of roads (including the widening or rerouting of existing roads) and any related tunnels, earthworks and cuttings,*
 - (b) *any extraction of materials necessary for that construction,*
 - (c) *any on site processing (including crushing, grinding or separating) of any extracted materials or other materials used in that construction.*
 - (2) *However, this clause does not apply to—*
 - (a) *the maintenance or operation of any road, or*
 - (b) *the replacement of part of an existing road.*
 - (3) *The activity to which this clause applies is declared to be a scheduled activity if the activity results in one or more of the following—*
 - (a) *the extraction or processing (over the life of the construction) of more than—*

- (i) 50,000 tonnes of materials in the case of premises in the regulated area or in the local government areas of Bega Valley, Eurobodalla, Goulburn Mulwaree, Queanbeyan-Palerang Regional or Snowy Monaro Regional, or
- (ii) 150,000 tonnes of material in any other case,
- (b) the existence of 4 or more traffic lanes (other than bicycle lanes or lanes used for entry or exit) for a continuous length of at least—
 - (i) 1 kilometre—where the road is in a metropolitan area and is classified, or proposed to be classified, as a freeway or tollway under the [Roads Act 1993](#), or
 - (ii) 3 kilometres—where the road is in a metropolitan area and is classified, or proposed to be classified, as a main road (but not a freeway or tollway) under the [Roads Act 1993](#), or
 - (iii) 5 kilometres—where the road is not in a metropolitan area and is classified, or proposed to be classified, as a main road, freeway or tollway under the [Roads Act 1993](#).

In response to the above, the proposed upgrades would most likely be considered “maintenance” or “replacement”. Further, the amount of road base required in the works would be significantly less than 150,000 tonnes and the length of the road is less than 3km. For these reasons, the proposed works would not require an EPL under the POEO Act.

4.3.8 Roads Act 1993

The *Roads Act 1993* outlines the processes involved with the opening of roads, road levels, closing of public roads, roadwork, regulation of traffic (both temporary and permanent) by roads authorities, entry onto land and financial assistance to roads authorities.

Section 138 of the Act provides:

138 Works and structures

(1) A person must not:

- (a) erect a structure or carry out a work in, on or over a public road, or
- (b) dig up or disturb the surface of a public road, or
- (c) remove or interfere with a structure, work or tree on a public road, or
- (d) pump water into a public road from any land adjoining the road, or
- (e) connect a road (whether public or private) to a classified road,

otherwise than with the consent of the appropriate roads authority.

Any approvals required pursuant to Section 138 would be obtained prior to construction commencing.

4.3.9 Waste Avoidance & Resource Recovery Act 2001

The objects of this Act include encouraging efficient use of resources and reducing environmental harm in accordance with the principals of ecologically sustainable development. The Act establishes a waste hierarchy for the avoidance, resource recovery and disposal of waste.

To meet these objectives the Act sets in place, a hierarchy of waste management by way of avoidance, recovery and disposal in descending order.

It is Council policy to recycle existing material to minimise disposal of road material.

4.3.10 Crown Lands Act 1989

The Crown Lands Act 1989 is administered by the NSW Department of Lands and controls the administration and management of Crown land. The object of the Act is to ensure that Crown land is managed for the benefit of the NSW community.

Given that the proposal does not involve Crown land, the Crown's consent is not required from the NSW Department of Lands.

4.3.11 Biosecurity Act 2015

The primary obligations of this Act are to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers.

Given that the construction of the shared pathways may require the removal of topsoil, the spread of weeds is a possibility. During construction, the removal of or disturbance to these weeds would be managed using industry-standard best practices to ensure the obligations of this Act were met in terms of minimisation of biosecurity, weed and pathogen risks. These have been incorporated into the mitigation measures discussed within Section 6.

5.0 Stakeholder and Community Consultation

5.1 COMMUNITY CONSULTATION

5.1.1 Adjoining and/or Affected Landholders

The proposed works would occur within close proximity to both industrial and business users, with the closest being approximately 5m from the works (installation of the shared pathway). At times, driveways to these properties would be blocked and general construction impacts would occur. For these reasons, consultation with residents/businesses in the immediate vicinity has been undertaken as part of the Detailed Design process.

5.1.2 Local Aboriginal Communities

Consultation with Local Aboriginal Communities is not considered necessary in this instance due to the minor nature of the works and its location within a disturbed setting.

5.1.3 The General Community

Community consultation would involve the following:

- Design information and a copy of the REF would be placed on Liverpool Listens website for community feedback.
- Residents close to the road section would receive information about the project via a letter box drop with request for feedback over 28 days.
- Design information and a copy of the REF would be placed at Council's Customer Service for review and community feedback.

5.2 GOVERNMENT AGENCY & STAKEHOLDER CONSULTATION

5.2.1 SEPP (T&H) 2021 Section 2.10-2.14 Consultation with Council

Section 2.10 of the ISEPP identifies instances when the relevant Council should be consulted as part of the infrastructure works as follows:

Section 2.10(1)

This clause applies to development carried out by or on behalf of a public authority that this Policy provides may be carried out without consent if, in the opinion of the public authority, the development:

- (a) *will have a substantial impact on stormwater management services provided by a council, or*

The proposed infrastructure would impact on the existing stormwater management services provided by Council. Council have reviewed the initial concept designs in this regard and any comments provided have been incorporated in the Detailed Design.

- (b) *is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area, or*

The proposed infrastructure would have a minor impact on increased traffic during construction, however it would be temporary only.

- (c) *involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council, or*

The proposed infrastructure would have no impacts on the existing sewerage system.

- (d) *involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council, or*

The proposed infrastructure does not involve connection to a water system owned by Council.

- (e) *involves the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential, or*

- (f) *involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the [Roads Act 1993](#) (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath).*

TfNSW and Council have been consulted throughout the design phase and will continue to be consulted through to construction. Comments received from both authorities with regards to the design have been incorporated as required.

Section 2.11 is not applicable as the infrastructure does not impact on items of local heritage significance.

Section 2.12 is not applicable as the infrastructure would not change flood patterns within a flood liable area.

Section 2.13 is not applicable as the infrastructure does not fall under any of the relevant provisions.

Section 2.14 is not applicable as the works are not located on land that is within a coastal vulnerability area zone.

5.2.2 SEPP (T&I) 2021 Section 2.15 - Consultation with Authorities other than Council

Section 2.15 of the SEPP identifies instances when public authorities other than the Council should be consulted as part of the infrastructure works, as follows:

- (1) *A public authority, or a person acting on behalf of a public authority, must not carry out specified development that this Policy provides may be carried out without consent unless the authority or person has:*
- (a) *given written notice of the intention to carry out the development (together with a scope of works) to the specified authority in relation to the development, and*
 - (b) *taken into consideration any response to the notice that is received from that authority within 21 days after the notice is given.*
- (2) *For the purposes of subclause (1), the following development is **specified development** and the following authorities are **specified authorities** in relation to that development:*
- (a) *development adjacent to land reserved under the [National Parks and Wildlife Act 1974](#) or to land acquired under Part 11 of that Act—the Office of Environment and Heritage,*
 - (b) *development on land in Zone E1 National Parks and Nature Reserves or in a land use zone that is equivalent to that zone—the Office of Environment and Heritage,*

- (c) *development adjacent to an aquatic reserve or a marine park declared under the [Marine Estate Management Act 2014](#)—the Department of Industry,*
- (d) *development in the foreshore area within the meaning of the [Sydney Harbour Foreshore Authority Act 1998](#)—the Sydney Harbour Foreshore Authority,*
- (e) *development comprising a fixed or floating structure in or over navigable waters—Roads and Maritime Services,*
- (f) *development for the purposes of a health services facility, correctional centre or group home, or for residential purposes, in an area that is bush fire prone land (as defined by the Act)—the NSW Rural Fire Service,*
- (g) *development that may increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map—the Director of the Observatory,*
- (h) *development on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument—the Secretary of the Commonwealth Department of Defence,*
- (i) *development on land in a mine subsidence district within the meaning of the [Mine Subsidence Compensation Act 1961](#)—the Mine Subsidence Board.*

Section 2.15 is not applicable as the proposed infrastructure is not identified as a “specified development”. Specifically, the infrastructure is not located within any of the above areas, including mine subsidence districts.

5.2.3 Consultation Beyond SEPP (T&I) 2021

In addition to the above, consultation has been undertaken with TfNSW throughout the funding and design stage. Both Council and TfNSW have worked together to define the current issues and identify appropriate solutions for this section of Bernera Road. These have been discussed in detail within Section 2.

6.0 Consideration of Environmental Factors

It is a requirement under Division 5.1 of the EP&A Act that all matters likely to affect the environment by reason of the activity be taken into account to the fullest extent possible.

The potential environmental impacts of the proposed infrastructure works have been generated based on the following:

- The background and objectives behind the proposed works as discussed within Section 2;
- The infrastructure components proposed, and the construction activities required to develop them, as discussed within Section 3;
- The legislative framework within which the works must comply, as discussed within Section 4;
- The input from relevant stakeholder and community consultation, as discussed within Section 5; and
- The existing environmental conditions, potential impacts and proposed safeguards, discussed below within Section 6.

6.1 LAND USES & SERVICES

6.1.1 Existing Environment

Site Description: The section of Bernera Road between Yarrowa Street, and Yato Road/Yarrunga Street provides direct access(s) to industrial and warehousing developments within the area.

Property Description: The proposed works are located entirely within the road reserve of Bernera Road, Yato Road and Yarrunga Street and would not encroach into any private properties.

Services/Easements: Various services run along both sides of Bernera Road, however these would not be impacted by the proposed works.

6.1.2 Impact Assessment

Construction

The construction of the proposed infrastructure has the potential to impact on land use through general impacts on public amenity and potential disruption to services during construction.

Operation

The operation of the Bernera Road upgrades would have a general improvement to the existing land users within the vicinity through the improved traffic and safety situation as discussed in detail within Section 2.

6.1.3 Safeguards

Based on the existing environment and impact assessment of the infrastructure on or by land uses, the following safeguards are proposed:

- 1.1 Notification would be given to all property owners who adjoin the infrastructure at least 14 days prior to works commencing. The notification shall include a brief description of the works and the dates and times they would be undertaken along with contact details in the case of complaints.

- 1.2 A Dial Before You Dig must be undertaken prior to any works commencing in order to locate buried services. If works are to be undertaken below power lines refer to Ausgrid Guidelines NS 209 Operating Cranes and Plant in Proximity to Power Line. If works are to be undertaken within the vicinity of Telstra pits refer to the Network Integrity Help Desk on 1800 653 935.
- 1.3 Council will consult with relevant service providers to identify possible interactions and develop procedures to be implemented to minimise the potential for service interruptions which have the potential to impact on existing land use.

Other mitigation measures which also relate to land use are included below within more specific categories.

6.2 SOILS & GEOLOGY

6.2.1 Existing Environment

Topography:

Rock: Given that the proposed infrastructure would only involve pavement milling of the existing asphalt wearing course, rock would not be encountered during construction.

Contamination: There is no known contamination along the infrastructure route and the site is not listed on the EPA contaminated land register (see Figure 4.2).

Mine Subsidence: The subject site is not located within a mine subsidence district.

Acid Sulphate Soils (ASS): The subject site is not identified as containing acid sulfate soils.

Landslip: The site is not located within an area expected to be subject to landslip given its gentle topography and soil structure.

Natural Cliff Features, Rock Outcrops or Rock Shelves: The site does not contain any cliff features, rock outcrops or rock shelves.

High Erosion Potential: The site does not have a high erosion potential due to the generally sealed nature of the works area and surrounds and gentle topography. Ground disturbing works would however, be required to install the shared pathways.

6.2.2 Impact Assessment

Construction

Based on the existing environment discussed above, construction of the proposed infrastructure has the potential to impact on, or be impacted by soils through:

- Erosion and Sedimentation: Impact to soils associated with construction activities would generally be limited to short-term erosion by means of wind and water.
- Disturbance to Topsoil: The removal of topsoil would be required as part of the construction works and as such, soil restoration measures would need to be adopted.

Operation

There were no ongoing impacts on soils and geology identified as a result of the proposed works.

6.2.3 Safeguards

Based on the existing environment and impact assessment of the infrastructure on or by soils and geology, the following safeguards are proposed:

- 2.1 An Erosion and Sediment Control Plan shall be prepared including measures consistent with the requirements of Council. Such measures are to be put in place prior to the commencement of construction.
- 2.2 Where excavated soil is to be used in site restoration, it would be excavated and stockpiled in sequential layers corresponding to the existing soil profile. Topsoil and leaf litter is to be removed first and windrowed in separate stockpiles of less than 1m in height on the upslope side of excavations. Soil layers would be replaced sequentially so that the soil profile is restored as closely as possible to its pre-work status.

The natural landform of the site(s) would be restored as closely as possible to the pre-works condition.

Rehabilitating exposed areas as soon as possible following excavation and completed no more than 10 days after works.

- 2.3 Should any unexpected contaminants be encountered during the works, Council will undertake required remediation in accordance with the environment protection guidelines.

6.3 HYDROLOGY, FLOODING & WATER

6.3.1 Existing Environment

Watercourses/Drainage Lines: The nearest watercourse to the proposed works, is over 1km to the west of Maxwells Creek and over 700m to the east of Cabramatta Creek.

Flooding: Bernera Road section has been identified as flooding overland flow path and flooding impact of the adjoining developments is considered to be of low or medium risk flooding (see Figure 6.1)

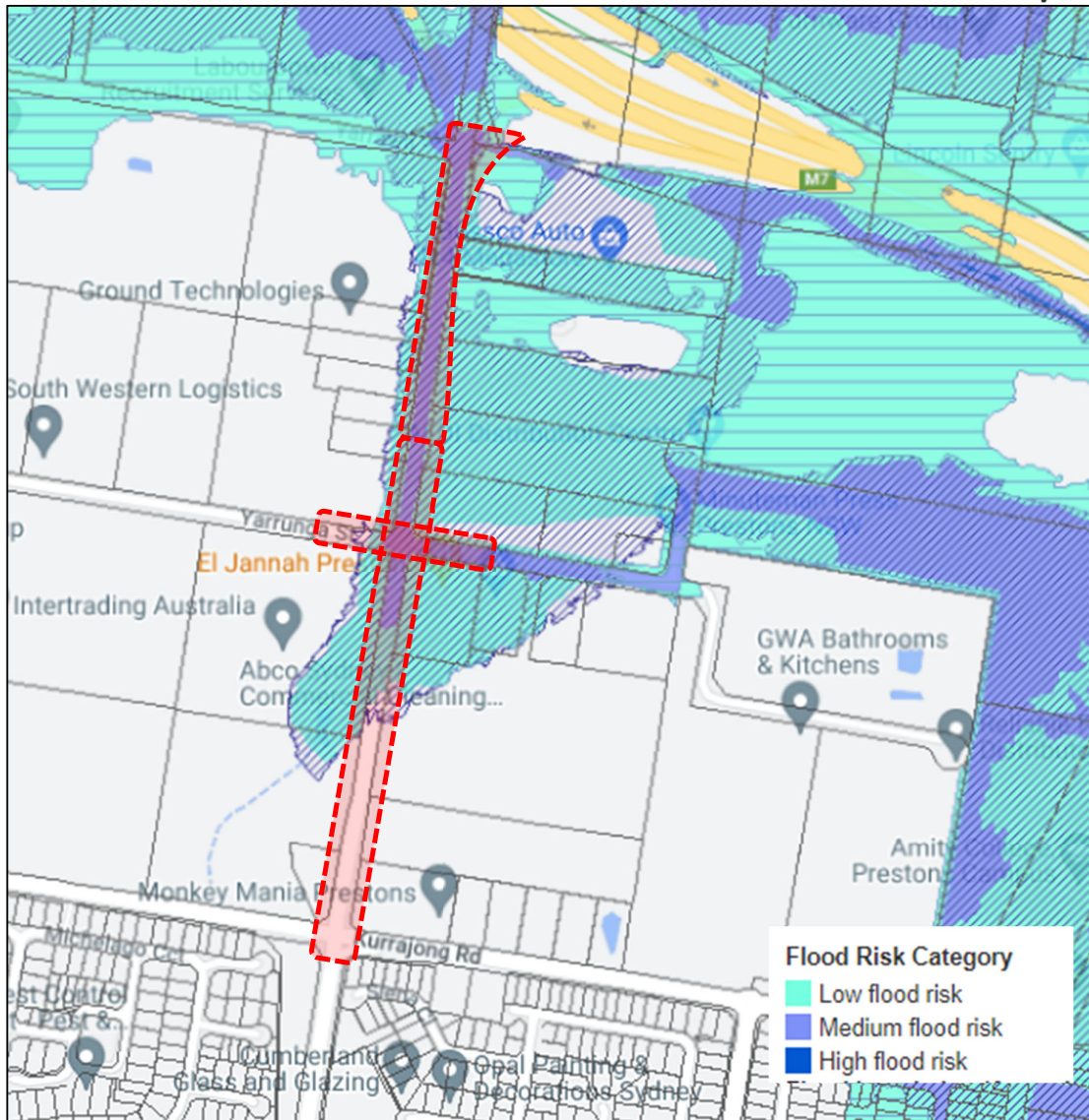


Figure 6.1: Flood Map

Drinking Catchment: The site is not located within a drinking water catchment.

6.3.2 Impact Assessment

Construction

Based on the existing environment discussed above, the construction of the proposed infrastructure has the potential to impact on or be impacted by hydrology, flooding and water through:

- Works within Flood Prone Land: Should construction occur during a period of flood, potential impacts on flood waters or obstruction to flood waters may occur.
- Erosion and Sedimentation: During earthworks for the construction of the proposed infrastructure works, surface soils would be exposed leading to potential soil erosion and sediment export. Potential impacts occurring directly from the soil eroded during the construction could include increased turbidity in receiving water bodies, damage to aquatic biota and siltation of downstream waterways.

- Fuels, Concrete wash and Chemicals: Spillage of fuels, concrete and chemicals used in construction works has the potential to impact upon surface water quality.

Operation

There were no ongoing impacts on hydrology, flooding and water identified as a result of the proposed works.

6.3.3 Safeguards

Based on the existing environment and impact assessment of the infrastructure on or by hydrology, flooding and water, the following safeguards are proposed:

- 3.1 In the event of heavy rainfall, no construction equipment, including stockpiles shall be located within flood affected portions of the site, so as to not block the passage of flood waters.
- 3.2 All fuels, chemicals and liquids are to be stored in an impervious bunded area away from:
 - Rivers, creeks or any areas of concentrated water flow;
 - Flooded or poorly drained areas including those identified within Figure 6.1;
 - Slopes above 10%;
 - The storage and handling of fuels and chemicals shall comply with Australian Standard AS1940;
 - A 'spill kit' will be kept on site at all times for potential chemical or fuel spills;
 - Any fuel, lubricant or hydraulic fluid spillages on land are to be collected using absorbent material and the contaminated material disposed of at an Office of Environment & Heritage licensed waste depot.
- 3.3 Potable water is to be used for wash down of vehicles and equipment.
- 3.4 Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc.) entering drain inlets or waterways. Containment material is to be used to capture / filter water used in wash down.
- 3.5 No concrete wash out is to be carried out on-site.
- 3.6 Water required for the proposal would be obtained from an approved source (e.g. potentially including hydrants or tankers).

6.4 BIODIVERSITY

6.4.1 Existing Environment

Native Vegetation/Endangered Ecological Communities (EEC): Disturbed road reserve within. No threatened ecological communities listed under the EPBC Act are expected to be impacted.

EPBC Act & BC Act listed threatened species, ecological community or migratory species: None anticipated due to lack of suitable habitat.

Wetlands, Aquatic flora or habitat (i.e. seagrasses, mangroves): Nil

Weeds/Pests: Weeds may be present within the road verges.

National Parks: N/A

Coastal zone: N/A

6.4.2 Impact Assessment

Construction

Based on the existing environment discussed above, the construction of the proposed infrastructure has the potential to impact on ecology through:

- Spread of Weeds: The proposed works area contains a variety of weeds, which if not managed properly, construction impacts could aid in their spread.

Operation

There were no ongoing impacts on biodiversity identified as a result of the proposed works.

6.4.3 Safeguards

Based on the existing environment and impact assessment of the infrastructure on or by biodiversity, the following safeguards are proposed:

- 4.1 The native trees and shrubs to be retained should be fenced off and signs installed to notify workers of their sensitive nature.
- 4.2 Pruning of native trees required in the scope of the proposed works should be undertaken by a qualified arborist.
- 4.3 No machinery or material should be stored within the retained vegetation or within the dripline of retained trees.
- 4.4 Equipment should be cleaned thoroughly and disinfected before entering and exiting site to prevent weed and disease introduction such as *Phytophthora cinnamomi* (Root-rot fungus), Myrtle Rust and others.
- 4.5 Effective weed control should be used on site, ensuring that appropriate methods are used to eliminate and dispose of highly competitive weeds.

6.5 NOISE & VIBRATION

6.5.1 Existing Environment

Noise Environment: The site is in an area of mixed commercial and light industrial activity.

Sensitive Receivers: approximately 30m away to the south, on the southern side of Kurrajong Road. The potential noise impacts at these receivers will be minimal with the dwellings being in close proximity to both Kurrajong Road and Benera Road (see Figure 6.2).

Critically Sensitive Receivers: There are no critically sensitive receivers such as nursing homes or hospitals in the nearby vicinity.



Figure 6.2: Potential Noise Impacts Receivers

Vibration: Given the close proximity of the existing buildings on Bernera Road, it is considered reasonable to make an assessment of vibrational impacts in this regard.

6.5.2 Impact Assessment

Construction

Based on the existing environment discussed above, the construction of the proposed infrastructure has the potential to impact on noise and vibration through:

- General construction-based noise: Construction works for the proposed upgrades would occur for more than three (3) weeks, however noise at one (1) location would generally move along the alignment of Bernera Road.

Equipment used during construction may include excavators, drilling equipment, trucks, rollers, generators and compactors – all machines likely to emit potential noise.

In order to minimise impacts on traffic during construction, some works would need to be undertaken outside of the standard working hours of:

- Monday-Friday: 7:00am to 6.00pm;
- Saturday: 8.00am to 1.00pm;
- Sunday and Public Holidays: no work.

To assess the impacts of the proposed works, a Construction Noise and Vibration Assessment was undertaken. The assessment concluded that:

- For the assessed new road pavement phase of works, the construction noise management level may be exceeded at the most exposed facade of offices or commercial locations that are closest to the site of the works.
- External noise levels at the commercial premises closest to the road will exceed the management level (within 40m in direct line of sight of the centre of the works). Under such circumstances, noise management practises should be implemented.

Full details in this regard are provided within the Construction Noise and Vibration Assessment located within **Appendix 4**.

- Vibration associated with the use of construction equipment: Vibration impacts on buildings and humans can occur when construction requires heavy equipment to remove existing road surfaces or compact new road surfaces etc.

To assess the impacts in this regard, a Construction Noise and Vibration Assessment was undertaken. The assessment concluded that received vibration levels would be less than a peak particle velocity of 5mm/s at distances of approximately 15m from a vibratory roller and less than 10m from a roller. Based on the most stringent building damage criterion, there is little likelihood of damage to any buildings due to the proposed construction works.

Full details in this regard are provided within the Construction Noise and Vibration Assessment located within **Appendix 4**.

Operation

The proposed works would increase the capacity of Bernera Road, however would also improve its LoS. With this in mind, the noise currently experienced during operation is likely to be similar to that following the upgrade works.

There were no ongoing vibration impacts identified as a result of the proposed works.

6.5.3 Safeguards

Based on the existing environment and impact assessment of the infrastructure by noise and vibration, the following safeguards are proposed:

- 5.1 Noise Planning: The proponent should undertake noise control planning as part of project pre-planning. This will identify potential noise problems and eliminate them in the planning phase prior to site works commencing.

Occupants of the commercial premises, with line of sight to the road, adjacent to the construction site should be notified of the project. This would, typically, be done by a letterbox drop. Included in the notification should be a description of proposed works and an outline of the proposed time frame for the various stages of the works.

The letterbox drop should include, as a minimum, all residences and commercial premises within 50m of Bernera Road along the length of the proposed works.

The contact name and phone number of a responsible person should be given out so that owners/occupants may comment on the works and indicate any particularly significant noise sensitive times.

The advice should also advise the name and phone number of the person responsible for accepting and dealing with complaints. All complaints or communications should be answered promptly and a record kept of all complaints, responses and actions.

The main contractor should plan to co-ordinate subcontractors so that there are no unnecessary cumulative impacts arising from the simultaneous activities of more than one subcontractor. That is, planning to avoid, if practical, having more than one noisy activity taking place in close proximity. It is good practice to appoint a single coordinator to oversee all significant noise producing activities.

- 5.2 Noise Management: All personnel working on the job including subcontractors and their employees must be made aware of their obligations and responsibilities with regard to minimising noise emissions.
- 5.3 Site inductions and toolbox meetings to all employees and subcontractors must include information about the need to minimise noise impacts to surrounding areas.

Contractors should familiarise themselves with methods of controlling noisy machines and alternative construction procedures. These are explained in AS2436-1981 "Guide to Noise Control on Construction, Maintenance and Demolition Sites".

Any activities identified in in the risk assessment phase, that are known or have the potential to create excessive noise should, where possible, be scheduled to occur at times to cause least annoyance to the community. This includes start up and idling etc. of heavy machinery prior to commencement of work.

Mechanical plant should be silenced using best available control technology. Noise suppression devices should be maintained to manufacturer's specifications.

All equipment used on the site shall have exhaust systems that have been recommended by the manufacturer as having the lowest associated noise for that machine.

Machines which are used intermittently such as rollers or other earthmoving machinery should either be shut down in the intervening periods between use or throttled down to a minimum.

Any portable equipment with the potential to create high levels of noise e.g. compressors, generators etc. should only be selected for use if it incorporates effective noise control. This equipment should be located where practical so that site sheds, or previously erected structures are between it and the nearest potentially affected receivers. Where no such barriers are present this machinery should be located behind a portable screen or enclosure.

The effectiveness of a noise barrier or screen depends on its length, height and its position relative to the source and the receiver. A screen designed to reduce noise from a stationary source should, where possible, extend a distance of twice the length of the noise source beyond the direct line of sight between the source and the receiver.

Plant known to emit noise strongly in one direction, such as a concrete agitator, should, where possible, be oriented such that the noise is directed away from the closest or the most noise sensitive receivers.

Regular and effective maintenance of all equipment including vehicles moving on and off the site should be conducted. Prompt attention must be given to repair of loose or rattling parts and broken equipment. All maintenance work should only be carried out by qualified persons.

When selecting contractors and/or equipment for the job, preference must be given to those with capacities best suited to the task at hand. That is the use of larger machines with excess capacity should be avoided unless these can be shown to be quieter than smaller capacity machines.

Site access should be designed such that delivery vehicles, and other heavy vehicles moving through the site can do so with minimum need to reverse.

Where possible, loading and unloading of plant and materials should be carried out away from potentially affected receivers.

Care should be taken not to drop materials from height either into, or out of trucks or other rigid surfaces. The surface to which the materials are being moved should be covered by some resilient material. Particular care should be taken during the loading or unloading of any scaffolding.

- 5.4 Subcontractor Management: It is the responsibility of the main contractor to ensure that all subcontractors comply with site requirements as well as statutory requirements. No subcontractor should be allowed on site without being able to prove duty of care for the safety of their employees and bystanders with regard to noise emissions.

No subcontractor should be allowed on site without being able to provide adherence to the noise control measures that are relevant to their respective operations.

- 5.5 Action Plan: The main contractor should develop an Action Plan. This would be a document that will state responsibilities, actions, due dates and specific controls to be implemented.

6.6 AIR QUALITY & ENERGY

6.6.1 Existing Environment

The air quality of Bernera Road would be as expected for a heavily congested main road within an industrial setting, thus being affected by significant traffic exhaust.

As noted within the noise assessment above, no sensitive receivers exist within the vicinity of the works.

6.6.2 Impact Assessment

Construction

Based on the existing environment discussed above, the construction of the proposed infrastructure has the potential to impact air quality through:

- Dust Generation: Dust can be generated by a number of construction activities including excavation; stockpiling; and vehicle movements.
- Emissions from Construction Equipment: Additional heavy vehicles required during construction have the potential to impact upon air quality.

The burning of fossil fuel, as required for the operation of most construction equipment, is usually a significant contributor to greenhouse gas emissions on infrastructure projects. Fuel use is likely to be the largest overall contributor to GHG emissions during the construction of this project.

- Line marking spray: Line marking requires the use of paint sprayed onto the road surface. In windy conditions, this can blow onto adjoining properties, vehicles, pedestrians etc.

Operation

The proposed works would increase the capacity of Bernera Road, however would also improve its LoS. With this in mind, whilst additional vehicles may use this road, there would be less congestion and this would reduce idle exhaust emissions.

6.6.3 Safeguards

Based on the existing environment and impact assessment of the infrastructure on air quality, the following safeguards are proposed:

- 6.1 Complaints during construction works are to be handled by the contractor. A contact name and number is to be displayed at the construction site.
- 6.2 To mitigate against the potential for dust to occur during construction, the following measures would be adopted:
 - All work sites, general work areas and stockpiles will be closely monitored for dust generation and watered down (with clean water) or covered (via seeding or tarpaulins) in the event of dry and/or windy conditions;
 - Rehabilitating exposed areas as soon as possible following excavation;
 - Ensuring mud is not carried onto public roads by vehicle tyres;
 - All loads of excavated material, soil, fill and other erodible matter that are transported to or from the work site will be kept covered at all times during transportation and will remain covered until they are unloaded either for use at the work site, reuse or disposal at an OEH licensed waste disposal facility.
- 6.3 To mitigate against the potential odour concerns from construction equipment emissions, the following measures would be adopted:
 - All working vehicles and construction equipment to be equipped with properly maintained exhaust systems that comply with the relevant Australian Standards;
 - Machinery and vehicles will not be left running or idling when not in use;
 - Odour or air pollutant emission complaints will be dealt with promptly and the source will be eliminated wherever practicable;
 - Proper maintenance of vehicle exhaust systems, and regular visual inspections of emissions;
 - Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or airborne particulates are likely;
 - Diesel vehicles and equipment will be turned off when not in use for a period of more than five minutes, and not left idling.
- 6.4 Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or airborne particulates are likely.

6.7 NON-ABORIGINAL HERITAGE

6.7.1 Existing Environment

A search of the NSW heritage database, Commonwealth EPBC heritage list and LEP has been conducted to reveal that no European heritage items are located near the proposed infrastructure.

6.7.2 Impact Assessment

Construction

The proposed infrastructure works would have no impact on any Non-Aboriginal heritage conservation areas or items.

Operation

There would be no impact on Non-Aboriginal heritage during the operation of Bernera Road.

6.7.3 Safeguards

Based on the existing environment and impact assessment of the infrastructure on Non-Aboriginal Heritage, the following precautionary safeguard is proposed:

- 7.1 If unrecorded relics are identified in the Project Area during works, then all works in the immediate area must cease and the area would be cordoned off. Department of Planning, Industry and Environment (DPIE) and Council will be informed to determine the appropriate management strategy.

6.8 ABORIGINAL HERITAGE

6.8.1 Existing Environment

An Aboriginal Due Diligence Report has been prepared by Apex Archaeology which concluded that the site is highly disturbed by past land uses and does not retain any archaeological potential. The subject works area also does not include any registered Aboriginal Sites or archaeological material.

6.8.2 Impact Assessment

Construction

The proposed infrastructure works would have no impact on any Aboriginal heritage items.

Operation

There would be no impact on Aboriginal heritage during the operation of Bernera Road.

6.8.3 Mitigation Measures

Based on the existing environment and impact assessment of the infrastructure on Aboriginal Heritage, the following precautionary safeguards are proposed:

- 8.1 If unrecorded Aboriginal object/s are identified in the Project Area during works, then all works in the immediate area must cease and the area would be cordoned off. Department of Planning, Industry and Environment (DPIE) will be informed to determine the appropriate management strategy.

- 8.2 In the unlikely event that skeletal remains are identified, work must cease immediately in the vicinity of the remains and the area must be cordoned off. The proponent must contact the local NSW Police who would make an initial assessment as to whether the remains are part of crime scene or possible Aboriginal remains. If the remains are thought to be Aboriginal, Department of Planning, Industry and Environment must be contacted. A Department of Planning, Industry and Environment officer would determine if the remains are Aboriginal or not; and a management plan must be developed in consultation with the relevant Aboriginal stakeholders before works recommence.

6.9 VISUAL AMENITY

6.9.1 Existing Environment

Visibility from residential properties: The works site does not adjoin nor is it located within close proximity to residential development. The site does however currently present as a congested heavy vehicle route which is readily visible by both business and industries along Bernera Road.

Scenic Value: The works area does not have a significant scenic value.

6.9.2 Impact Assessment

Construction

Based on the existing environment, visual impacts due to construction of the proposed roadworks would be minimal given the temporary nature of the works and would relate to construction equipment and processes only.

Operation

Above ground/visible aspects of the proposed works would be minimal as the pavement width of the road would generally remain unchanged.

Further to the above, no acoustic walls, retaining walls, areas of shotcrete, or altered lighting would be required.

6.9.3 Mitigation Measures

Based on the existing environment and impact assessment of the infrastructure on the visual environment, the following precautionary safeguards are proposed:

- 9.1 The site will be kept rubbish free at all times.
- 9.2 Temporary erosion and sediment controls would be removed from the site once landforms have been assessed as stable.
- 9.3 All disturbed areas would be rehabilitated and progressively stabilised following the completion of the works.

6.10 TRAFFIC & ACCESS

6.10.1 Existing Environment

The existing traffic environment has been discussed at length within Section 2.

6.10.2 Impact Assessment

Construction

Based on the existing environment discussed above, the construction of the proposed infrastructure has the potential to impact on traffic and access through:

- **Increased Construction Vehicle Traffic:** The construction of the proposed infrastructure has the potential to impact on traffic and transportation through increased construction vehicle movements to and from the site.
- **Disruption to Private Property Access:** For short periods, it is likely that vehicular access to all properties along the impacted length of Bernera Road will be disrupted.
- **Road Closures:** Temporary road or lane closures would be required as part of the proposed construction process. Footpath and services relocation works would be undertaken as day works with intermittent lane closures. It is expected that only northbound traffic lanes would be impacted. Road pavement works may require night or weekend works which will require full road closure. Detour routes would be clearly marked and Businesses advised prior to undertaking full road closure. The reduction of the speed limit from 60km/h to 40km/h would also be required along the works area.

Operation

Full details with regards to the benefits of the proposed upgrades to the traffic environment have been provided within Section 2.

6.10.3 Mitigation Measures

Based on the existing environment and impact assessment of the infrastructure on traffic and access, the following mitigation measures are proposed:

- 10.1 Where possible, current traffic movements and property accesses are to be maintained during the workday. Any disturbance is to be minimised to prevent unnecessary traffic delays.
- 10.2 Where changes to access arrangements are necessary, Council will advise owners and tenants and consult with them in advance regarding alternate access arrangements.
- 10.3 Where works would affect the free flow of traffic, a Road Occupancy Licence would be obtained from the Road Authority and a Traffic Control Plan would be prepared in accordance with the requirements of the Roads and Maritime's Traffic Control at Worksites Manual (2018) and Australian Standard (AS1743.3 Traffic Control Devices for Projects on Roads).
- 10.4 The Contractor would prepare a Traffic Management Plan in consultation with the relevant traffic authorities prior to the commencement of construction works.
- 10.5 Appropriate signage (such as variable message signs) and supervision would be provided at all times to ensure that all work areas are controlled and that unauthorised personnel (e.g. pedestrians) are excluded from work areas.
- 10.6 Vehicle movement arrangements would be developed to limit impacts on other road users (including pedestrians, vehicles and cyclists) and the environment, with specific regard to other road works in the area, local traffic movement requirements and peak traffic volumes.

- 10.7 Appropriate pedestrian traffic controls must be set up to allow safe passage of pedestrians around the work site.

6.11 WASTE GENERATION

6.11.1 Existing Environment

Properties in the area are serviced by Council waste management services.

6.11.2 Impact Assessment

Construction

Construction works have the potential to generate waste through the following activities:

- Green waste from the removal of top soil and grasses (addressed within Section 6.2);
- Generation of hazardous waste: Generation of hazardous waste (i.e. oils, fuels, lubricants, concrete washout etc) is possible during construction, which if not disposed of appropriately, has the potential to pollute the environment;
- General waste from construction site amenities: The primary waste management objective would be to minimise waste generation where possible and encourage reuse of waste materials. Collection and disposal of waste should be undertaken progressively to lessen the impact of its presence.

Operation

The potential for generation of waste following construction of the proposed infrastructure works would be limited to waste generated from periodic maintenance.

6.11.3 Mitigation Measures

The following mitigation measures are proposed, based on the existing environment and impact assessment of the infrastructure on waste generation:

- 11.1 A Waste Management Plan shall be prepared in accordance with the Waste Avoidance and Resource Recovery Act and include:
- All waste generated during the course of the works will be reused or removed from the work areas as soon as practicable and disposed of in accordance with waste regulations;
 - Evidence of the lawful disposal or reuse of waste will be retained and provided to Council on request;
 - All vessels used for contaminated or hazardous waste should be sealed, labelled according to their contents, and stored within bunded areas until their removal from the work site;
 - Any fuel, lubricant or hydraulic fluid spillages will be collected using absorbent material and the contaminated material disposed of at a licensed waste facility;
 - The work site(s) will be left clean and free of weeds, debris and other rubbish at the end of works;
 - All hazardous wastes on site will be removed and disposed in accordance with the state and national regulations and guidelines and best practice for the removal of these materials.
- 11.2 Any concrete washout would be established in accordance with Best Practice Guidelines (Department of Environment and Conservation's Environmental Best Practice Management Guideline for Concreting Contractors).

6.12 SOCIO-ECONOMIC SETTING

6.12.1 Existing Environment

As discussed above, properties located along the subject section of Bernera Road include business and industrial premises. Access to these uses is provided directly off Bernera Road, Yato Road or Yarrunga Street.

6.12.2 Impact Assessment

Construction

Aside from those issues discussed above, additional negative socio-economic impacts during the construction of the proposed infrastructure works are considered unlikely.

Ongoing

The amendments to Bernera Road will generally have positive social-economic impacts through reduced crash incidents, improve safety and improve traffic efficiencies. These are discussed in full within Section 2.

6.12.3 Mitigation Measures

No additional safeguards or management measures are required beyond those discussed previously under separate environmental considerations.

6.13 CUMULATIVE IMPACTS

The proposal has the potential to have temporary cumulative environmental effects with other existing or likely future activities (other construction projects in the area), however the effects would be minimal due to the limited scope of works for the activities covered in this REF, and the potential impacts on the environment would be minimised with the implementation of the safeguards set out in Section 6.

7.0 Summary of Safeguards

In order to prevent the potential environmental issues highlighted within Section 6, the following safeguards are proposed:

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
A Construction Environmental Management Plan shall be prepared by the contractor prior to any construction occurring on site and shall include (but not limited to) the following mitigation methods:			
1. Land Uses and Services			
Disruption to surrounding residents	1.1. Notification would be given to all property owners who adjoin the infrastructure at least 14 days prior to works commencing. The notification shall include a brief description of the works and the dates and times they would be undertaken along with contact details in the case of complaints.	Prior Construction Commencing to	Contractor/Council
Avoidance of existing services/easements	1.2. A Dial Before You Dig must be undertaken prior to any works commencing in order to locate buried services. If works are to be undertaken below power lines, refer to Ausgrid Guidelines NS 209 Operating Cranes and Plant in Proximity to Power Line. If works are to be undertaken within the vicinity of Telstra pits, refer to the Network Integrity Help Desk on 1800 653 935.	Prior Construction Commencing to	Contractor
	1.3. Council will consult with relevant service providers during the detailed design to identify possible interactions and develop procedures to be implemented to minimise the potential for service interruptions which have the potential to impact on existing land use.	Prior Construction Commencing to	Council
2. Soils and Geology			
Disturbance to Topsoil	2.1 An Erosion and Sediment Control Plan shall be prepared including measures consistent with the requirements of Council. Such measures are to be put in place prior to the commencement of construction. 2.2 Where excavated soil is to be used in site restoration, it would be excavated and stockpiled in sequential layers corresponding to the existing soil profile. Topsoil and leaf litter is to be removed first and windrowed in separate stockpiles of less than 1m in height on the upslope side of excavations. Soil layers would be replaced sequentially so that the soil profile is restored as closely as possible to its pre-work status.	Prior Construction Commencing to	Contractor

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
	<p>The natural landform of the site(s) would be restored as closely as possible to the pre-works condition.</p> <p>Rehabilitating exposed areas as soon as possible following excavation and completed no more than 10 days after works.</p>		
Discovery of potential contaminants	2.3 Should any unexpected contaminants be encountered during the works; the Contractor is to advise for Council to undertake required remedial measures.	Prior to Construction Commencing	Contractor/Council
3. Hydrology, Flooding & Water			
Flooding	3.1 In the event of heavy rainfall, no construction equipment, including stockpiles shall be located within flood affected portions of the site, so as to not block the passage of flood waters.	During Construction	Contractor
Fuels, Concrete wash and Chemicals	<p>3.2 All fuels, chemicals and liquids are to be stored in an impervious bunded area away from:</p> <ul style="list-style-type: none"> • Rivers, creeks or any areas of concentrated water flow; • Flooded or poorly drained areas including those identified within Figure 6.1; • Slopes above 10%; • The storage and handling of fuels and chemicals shall comply with Australian Standard AS1940; • A 'spill kit' will be kept on site at all times for potential chemical or fuel spills; • Any fuel, lubricant or hydraulic fluid spillages on land are to be collected using absorbent material and the contaminated material disposed of at an Office of Environment & Heritage licensed waste depot. <p>3.3 Potable water is to be used for wash down of vehicles and equipment.</p> <p>3.4 Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc.) entering drain inlets or waterways. Containment material is to be used to capture / filter water used in wash down.</p> <p>3.5 No concrete wash out is to be carried out on-site.</p>	Prior to Construction Commencing/ During Construction	Contractor

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
	3.6 Water required for the proposal would be obtained from an approved source (e.g. potentially including hydrants or tankers).		
4. Biodiversity			
Vegetation impacts	<p>4.1 The native trees and shrubs to be retained should be fenced off and signs installed to notify workers of their sensitive nature.</p> <p>4.2 Pruning of native trees required in the scope of the proposed works should be undertaken by a qualified arborist.</p> <p>4.3 No machinery or material should be stored within the retained vegetation or within the dripline of retained trees.</p>	During Construction	Contractor
Spread of weeds/disease	<p>4.4 Equipment should be cleaned thoroughly and disinfected before entering and exiting site to prevent weed and disease introduction such as <i>Phytophthora cinnamomi</i> (Root-rot fungus), Myrtle Rust and others.</p> <p>4.5 Effective weed control should be used on site, ensuring that appropriate methods are used to eliminate and dispose of highly competitive weeds.</p>	During Construction	Contractor
5. Noise & Vibration			
General construction-based noise and vibration	<p>5.1 Noise Planning: The proponent should undertake noise control planning as part of project pre-planning. This will identify potential noise problems and eliminate them in the planning phase prior to site works commencing.</p> <p>Occupants of the commercial premises, with line of sight to the road, adjacent to the construction site should be notified of the project. This would, typically, be done by a letterbox drop. Included in the notification should be a description of proposed works and an outline of the proposed time frame for the various stages of the works.</p> <p>The letterbox drop should include, as a minimum, all residences and commercial premises within 50m of Bernera Road along the length of the proposed works.</p> <p>The contact name and phone number of a responsible person should be given out so that owners/occupants may comment on the works and indicate any particularly significant noise sensitive times.</p>	Prior Construction Commencing to	Contractor/Council

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
	<p>The advice should also advise the name and phone number of the person responsible for accepting and dealing with complaints. All complaints or communications should be answered promptly and a record kept of all complaints, responses and actions.</p> <p>The main contractor should plan to co-ordinate subcontractors so that there are no unnecessary cumulative impacts arising from the simultaneous activities of more than one subcontractor. That is, planning to avoid, if practical, having more than one noisy activity taking place in close proximity. It is good practice to appoint a single coordinator to oversee all significant noise producing activities.</p>		
	<p>5.2 Noise Management: All personnel working on the job including subcontractors and their employees must be made aware of their obligations and responsibilities with regard to minimising noise emissions.</p>	<p>Prior to Construction Commencing/ During Construction</p>	<p>Contractor</p>
	<p>5.3 Site inductions and toolbox meetings to all employees and subcontractors must include information about the need to minimise noise impacts to surrounding areas.</p> <p>Contractors should familiarise themselves with methods of controlling noisy machines and alternative construction procedures. These are explained in AS2436-1981 “Guide to Noise Control on Construction, Maintenance and Demolition Sites”.</p> <p>Any activities identified in in the risk assessment phase, that are known or have the potential to create excessive noise should, where possible, be scheduled to occur at times to cause least annoyance to the community. This includes start up and idling etc. of heavy machinery prior to commencement of work.</p> <p>Mechanical plant should be silenced using best available control technology. Noise suppression devices should be maintained to manufacturer’s specifications.</p>	<p>Prior to Construction Commencing/ During Construction</p>	<p>Contractor</p>

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
	<p>All equipment used on the site shall have exhaust systems that have been recommended by the manufacturer as having the lowest associated noise for that machine.</p> <p>Machines which are used intermittently such as rollers or other earthmoving machinery should either be shut down in the intervening periods between use or throttled down to a minimum.</p> <p>Any portable equipment with the potential to create high levels of noise e.g. compressors, generators etc. should only be selected for use if it incorporates effective noise control. This equipment should be located where practical so that site sheds, or previously erected structures are between it and the nearest potentially affected receivers. Where no such barriers are present this machinery should be located behind a portable screen or enclosure.</p> <p>The effectiveness of a noise barrier or screen depends on its length, height and its position relative to the source and the receiver. A screen designed to reduce noise from a stationary source should, where possible, extend a distance of twice the length of the noise source beyond the direct line of sight between the source and the receiver.</p> <p>Plant known to emit noise strongly in one direction, such as a concrete agitator, should, where possible, be oriented such that the noise is directed away from the closest or the most noise sensitive receivers.</p> <p>Regular and effective maintenance of all equipment including vehicles moving on and off the site should be conducted. Prompt attention must be given to repair of loose or rattling parts and broken equipment. All maintenance work should only be carried out by qualified persons.</p> <p>When selecting contractors and/or equipment for the job, preference must be given to those with capacities best suited to the task at hand. That is the use of larger machines with excess capacity should be avoided unless these can be shown to be quieter than smaller capacity machines.</p>		

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
	<p>Site access should be designed such that delivery vehicles, and other heavy vehicles moving through the site can do so with minimum need to reverse.</p> <p>Where possible, loading and unloading of plant and materials should be carried out away from potentially affected receivers.</p> <p>Care should be taken not to drop materials from height either into, or out of trucks or other rigid surfaces. The surface to which the materials are being moved should be covered by some resilient material. Particular care should be taken during the loading or unloading of any scaffolding.</p>		
	<p>5.4 Subcontractor Management: It is the responsibility of the main contractor to ensure that all subcontractors comply with site requirements as well as statutory requirements. No subcontractor should be allowed on site without being able to prove duty of care for the safety of their employees and bystanders with regard to noise emissions.</p> <p>No subcontractor should be allowed on site without being able to provide adherence to the noise control measures that are relevant to their respective operations.</p>	<p>Prior to Construction Commencing/ During Construction</p>	<p>Contractor</p>
	<p>5.5 Action Plan: The main contractor should develop an Action Plan. This would be a document that will state responsibilities, actions, due dates and specific controls to be implemented.</p>	<p>Prior to Construction Commencing/ During Construction</p>	<p>Contractor</p>
6. Air Quality & Energy			
<p>General Air Quality impacts</p>	<p>6.1 Complaints during construction works are to be handled by the contractor. A contact name and number is to be displayed at the construction site.</p>	<p>During Construction</p>	<p>Contractor</p>
<p>Dust, odour and overspray</p>	<p>6.2 To mitigate against the potential for dust to occur during construction, the following measures would be adopted:</p> <ul style="list-style-type: none"> All work sites, general work areas and stockpiles will be closely monitored for dust generation and watered down (with clean water) or covered (via seeding or tarpaulins) in the event of dry and/or windy conditions; 	<p>Prior to Construction Commencing/ During Construction</p>	<p>Contractor</p>

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
	<ul style="list-style-type: none"> Rehabilitating exposed areas as soon as possible following excavation; Ensuring mud is not carried onto public roads by vehicle tyres; All loads of excavated material, soil, fill and other erodible matter that are transported to or from the work site will be kept covered at all times during transportation and will remain covered until they are unloaded either for use at the work site, reuse or disposal at an OEH licensed waste disposal facility. <p>6.3 To mitigate against the potential odour concerns from construction equipment emissions, the following measures would be adopted:</p> <ul style="list-style-type: none"> All working vehicles and construction equipment to be equipped with properly maintained exhaust systems that comply with the relevant Australian Standards; Machinery and vehicles will not be left running or idling when not in use; Odour or air pollutant emission complaints will be dealt with promptly and the source will be eliminated wherever practicable; Proper maintenance of vehicle exhaust systems, and regular visual inspections of emissions; Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or airborne particulates are likely; Diesel vehicles and equipment will be turned off when not in use for a period of more than five minutes, and not left idling. <p>6.4 Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or airborne particulates are likely.</p>		
7. Non-Aboriginal Heritage			
Impacts on unrecorded Non-Aboriginal heritage items	7.1 If unrecorded relics are identified in the Project Area during works, then all works in the immediate area must cease and the area would be cordoned off. Department of Planning, Industry and Environment (DPIE) and Council will be informed to determine the appropriate management strategy.	During Construction	Contractor

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
8. Aboriginal Heritage			
Impacts on unrecorded Aboriginal heritage items	<p>8.1 If unrecorded Aboriginal object/s are identified in the Project Area during works, then all works in the immediate area must cease and the area would be cordoned off. Department of Planning, Industry and Environment (DPIE) will be informed to determine the appropriate management strategy.</p> <p>8.3 In the unlikely event that skeletal remains are identified, work must cease immediately in the vicinity of the remains and the area must be cordoned off. The proponent must contact the local NSW Police who would make an initial assessment as to whether the remains are part of a crime scene or possible Aboriginal remains.</p> <p>If the remains are thought to be Aboriginal, Department of Planning, Industry and Environment must be contacted. A Department of Planning, Industry and Environment officer would determine if the remains are Aboriginal or not; and a management plan must be developed in consultation with the relevant Aboriginal stakeholders before works recommence.</p>	During Construction	Contractor
9. Visual Amenity			
General visual amenity impacts	<p>9.1 The site will be kept rubbish free at all times.</p> <p>9.2 Temporary erosion and sediment controls would be removed from the site once landforms have been assessed as stable.</p> <p>9.3 All disturbed areas would be rehabilitated and progressively stabilised following the completion of the works.</p>	During Construction	Contractor
10. Traffic & Access			
Access to private properties	<p>10.1 Where possible, current traffic movements and property accesses are to be maintained during the workday. Any disturbance is to be minimised to prevent unnecessary traffic delays.</p> <p>10.2 Where changes to access arrangements are necessary, Council will advise owners and tenants and consult with them in advance regarding alternate access arrangements.</p>	Prior to Construction Commencing/ During Construction	Contractor/Council

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
<p>Traffic/pedestrian impacts during construction</p>	<p>10.3 Where works would affect the free flow of traffic, a Road Occupancy Licence would be obtained from the Road Authority and a Traffic Control Plan would be prepared in accordance with the requirements of the Roads and Maritime's Traffic Control at Worksites Manual (2018) and Australian Standard (AS1743.3 Traffic Control Devices for Projects on Roads).</p> <p>10.4 The Contractor would prepare a Traffic Management Plan in consultation with the relevant traffic authorities prior to the commencement of construction works.</p> <p>10.5 Appropriate signage (such as variable message signs) and supervision would be provided at all times to ensure that all work areas are controlled and that unauthorised personnel (e.g. pedestrians) are excluded from work areas.</p> <p>10.6 Vehicle movement arrangements would be developed to limit impacts on other road users (including pedestrians, vehicles and cyclists) and the environment, with specific regard to other road works in the area, local traffic movement requirements and peak traffic volumes.</p> <p>10.7 Appropriate pedestrian traffic controls must be set up to allow safe passage of pedestrians around the work site.</p>	<p>Prior Construction Commencing/ During Construction to</p>	<p>Contractor/Council</p>
11. Waste Generation			
<p>Waste generation</p>	<p>11.1 A Waste Management Plan shall be prepared in accordance with the Waste Avoidance and Resource Recovery Act and include:</p> <ul style="list-style-type: none"> • All waste generated during the course of the works will be reused or removed from the work areas as soon as practicable and disposed of in accordance with waste regulations; • Evidence of the lawful disposal or reuse of waste will be retained and provided to the Council on request; • All vessels used for contaminated or hazardous waste should be sealed, labelled according to their contents, and stored within bunded areas until their removal from the work site; • Any fuel, lubricant or hydraulic fluid spillages will be collected using absorbent material and the contaminated material disposed of at a licensed waste facility; 	<p>Prior Construction Commencing/ During Construction to</p>	<p>Contractor</p>

ASPECT	SAFEGUARD	TIMING	RESPONSIBILITY
	<ul style="list-style-type: none"> • The work site(s) will be left clean and free of weeds, debris and other rubbish at the end of works; • All hazardous wastes on site will be removed and disposed in accordance with the state and national regulations and guidelines and best practice for the removal of these materials. <p>11.2 Any concrete washout would be established in accordance with Best Practice Guidelines (Department of Environment and Conservation's Environmental Best Practice Management Guideline for Concreting Contractors).</p>		

8.0 Conclusion

8.1 SUMMARY OF BENEFICIAL EFFECTS

The assessment undertaken for this REF has identified the following permanent and positive effects on the physical, biophysical and social environment through the construction and operation of the Bernera Road upgrades:

- Reduces traffic congestion.
- Reduced traffic delays.
- Additional road capacity to meet future needs.
- Reduce crashes and improve road safety.
- Provides shared path on the western side of Bernera Road which would improve facilities for pedestrians and cyclists.

8.2 SUMMARY OF ADVERSE EFFECTS

The assessment undertaken for this REF has identified the following potential adverse effects on the physical, biophysical and social environment through the construction and operation of the Bernera upgrades:

Construction

- Impact on existing land use and services;
- Impact on soil and/or water quality through erosion and sedimentation; disturbance of topsoils; generation of additional pollutants;
- Impacts through potential weed/disease dispersal;
- Impact on air quality through dust generation, over-spray from line-marking paint and construction vehicle emissions;
- Increased use of fossil fuel burning construction vehicles;
- General construction related impacts on the surrounding visual catchment;
- Impact on noise and vibration amenity through construction vehicle use;
- Impact on traffic and transportation through increased construction vehicle movements to and from the site and potential road/lane closures;
- Impact on access to private properties;
- Additional construction-based waste generation.

Ongoing Operation

- No ongoing impacts identified.

8.3 SUMMARY

The following conclusions have been derived from undertaking this REF:

- Having regard to the safeguard measures proposed, the proposed infrastructure is unlikely to significantly affect the environment and therefore Division 5.1 of the EP&A Act provides that an EIS is not considered to be warranted;
- The proposed infrastructure would not affect a declared critical habitat; would not affect threatened species, populations or ecological communities or their habitats and it is therefore considered that a SIS is not required;
- The proposed infrastructure would not affect any Commonwealth Lands and would not have any impacts on matters of NES;
- The proposed infrastructure is central to the improved efficiency and safety of the traffic environment along Bernera Road;
- The construction of the proposed infrastructure is considered to have some minor environmental impacts as discussed within Section 6 and summarised in Section 8.2. These are either temporary in nature, inconsequential in nature or are able to be avoided through mitigation methods;
- Overall, it is concluded that the minor environmental impacts are outweighed by the significant social and economic benefits of the proposed upgrades and the flow on effects this will have to the users of Bernera Road.

Taking the above into consideration, the REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity and has concluded that the proposal warrants support.

9.0 Declaration

This Review of Environmental Factors provides a true and fair review of the activity in relation to its likely impact on the environment. It addresses to the fullest extent possible, all of the factors listed in Section 171 of the *Environmental Planning and Assessment Regulations* (as amended) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act* (as amended).

A handwritten signature in black ink, appearing to be 'Ben Jia'.

Signed:

Name:

Ben Jia
Bachelor of Urban Planning

Position:

Town Planner

Date:

04/01/2023

Appendix 1

PROPOSED BERNERA ROAD UPGRADE WORKS

Appendix 2

SECTION 171 ASSESSMENT

Appendix 3

ABORIGINAL DUE DILIGENCE ASSESSMENT

Appendix 4

CONSTRUCTION AND VIBRATION ASSESSMENT

Appendix 5

EPBC ACT PROTECTED MATTERS REPORT