



Transport
Roads & Maritime
Services

ENVIRONMENTAL ASSESSMENT AND DECISION-MAKING BY NSW ROADS AND MARITIME SERVICES

**STRATEGIC ASSESSMENT – UNDER PART 10, ENVIRONMENT
PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999**

Strategic Assessment Report - FINAL

MAY 2015

(blank page)

Roads and Maritime Services

Environmental assessment and decision-making by NSW Roads and Maritime Services

Strategic Assessment – *under Part 10, Environment Protection and
Biodiversity Conservation Act 1999*

Strategic Assessment Report - FINAL

May 2015

(blank page)

Contents

1	Introduction	1
1.1	Background.....	1
1.2	Structure of the Strategic Assessment Report.....	1
1.3	Strategic Assessment Process.....	2
1.4	Timeframe for this Strategic Assessment.....	4
1.5	Benefits of the Program	4
1.6	Finalising the Program	4
2	Purpose and description	6
2.1	Purpose of the Strategic Assessment Report.....	6
2.2	Need and justification for the Program	6
2.2.1	Program context	6
2.2.2	Need for the Program	7
2.3	Strategic Assessment area and duration.....	8
2.4	Program development.....	8
2.4.1	Role and responsibilities	8
2.4.2	Project management systems.....	9
2.5	Legislative context	10
2.5.1	Legislative framework	10
2.5.2	Environmental impact assessment process	11
2.6	Actions under the Program	13
2.7	Program implementation and review.....	13
2.7.1	Current implementation of the Program	13
2.7.2	Ongoing adoption and implementation of the Program	15
3	Details of the Program	16
3.1	Ecologically sustainable development.....	16
3.2	Applying the ‘avoid, minimise, mitigate, offset’ hierarchy.....	17
3.2.1	Overview of the ‘avoid, minimise, mitigate, offset’ hierarchy.....	17
3.2.2	Current implementation.....	19
3.2.3	Future improvements	19
3.3	Environmental impact assessment and management - guidelines and procedures....	19
3.3.1	Overview of EIA procedures	20
3.3.2	Current implementation.....	21
3.3.3	Future improvements	22
3.4	Public consultation	22
3.4.1	Overview.....	22
3.4.2	Current implementation.....	23
3.4.3	Future improvements	24

3.5	Decision-making	24
3.5.1	Current implementation.....	24
3.5.2	Future improvements	25
3.6	Implementation phase.....	25
3.6.1	Procurement (pre-construction).....	26
3.6.2	Delivery phase (construction).....	26
3.6.3	Ongoing operation and maintenance	28
3.7	Addressing uncertainty and adaptive management.....	28
3.8	Case Studies	30
3.9	Summary of environmental assessment policies, processes and procedural guidelines	
	35	
4	Assessing Program impacts on Specified Protected Matters	38
4.1	Overview.....	38
4.2	Roads and Maritime activities	38
4.2.1	Grouping minor work activities	39
4.2.2	Grouping other road activities	40
4.3	Roads and Maritime activities - impacts and hazards.....	41
4.4	Specified Protected Matters	42
4.4.1	Prioritising Specified Protected Matters.....	44
4.4.2	Grouping Specified Protected Matters.....	45
4.4.3	Expert review and input	47
4.4.4	Prioritised species and groups	47
4.5	Assessment of impacts to Specified Protected Matters	47
4.5.1	Identification of risk to Specified Protected Matters	47
4.5.2	Assessment of risk to Specified Protected Matters	48
4.6	Risk analysis results and discussion	49
4.6.1	Results of the risk analysis.....	49
4.6.2	Review of hazards with high and very high risk to Specified Protected Matters.	51
4.6.3	Avoiding and minimising risk to Specified Protected Matters.....	58
4.6.4	Conclusion – impacts of the Program	59
5	How the Program meets the requirements of the EPBC Act	60
5.1	EPBC Act requirements	60
5.2	EPBC Act required outcomes.....	60
5.3	Listed threatened species	68
5.3.1	EPBC Act-listed threatened species	68
5.3.2	EPBC Act-listed threatened species within NSW	68
5.3.3	Protection of EPBC Act-listed threatened species.....	68
5.3.4	NSW guidance documents for threatened species.....	71
5.4	Threatened Ecological Communities.....	72
5.4.1	EPBC Act-listed ecological communities within NSW.....	72

5.4.2	Protection of EPBC Act-listed Threatened Ecological Communities	72
5.4.3	NSW guidance documents for ecological communities	73
5.5	Migratory species	74
5.5.1	EPBC Act-listed migratory species within NSW	74
5.5.2	Protection of migratory species under the EPBC Act	74
5.5.3	NSW guidance documents for migratory species	75
5.6	Safeguards under the Program	76
6	Promoting ESD and biodiversity conservation	77
6.1	Meeting the objects of the EPBC Act	77
6.1.1	Object (a) of the EPBC Act	77
6.1.2	Object (b) of the EPBC Act	78
6.1.3	Object (c) of the EPBC Act	79
6.1.4	Object (d) of the EPBC Act	80
6.1.5	Object (e) of the EPBC Act	80
6.1.6	Objects (f) and (g) of the EPBC Act	81
6.2	Enhancing survival or conservation status of Specified Protected Matters	81
7	Program evaluation and review	82
7.1	Program evaluation	82
7.2	Program reporting	82
7.3	Program modification	83
8	References and information sources	84
Appendix A	Terms of Reference	86
Appendix B	EIA practice note - ESD	87
Appendix C	Roads and Maritime activities	88
Appendix D	Specified Protected Matters	89
Appendix E	Species prioritisation and grouping methodology	90
Appendix F	Specified Protected Matters impact profiles (including risk assessment)	91
Appendix G	Summary of typical management measures	92

Tables

Table E-1: Key Program outcomes	ii
Table 1-1 Timeframe for the strategic assessment.....	4
Table 2-1 Roads and Maritime project delivery objectives.....	7
Table 2-2: Specified Protected Matters and key outcomes sought from the Program.....	8
Table 2-3: Overview of Roads and Maritime environmental assessment procedures.....	14
Table 3-1: Key Roads and Maritime procedural guidelines and practice notes.....	36
Table 4-1: Summary of ‘high’ and ‘very high’ risk assessment results	49
Table 4-2: Managing habitat loss and impacts to vegetation in construction	52
Table 4-3: Managing fragmentation impacts and connectivity loss	56
Table 5-1: Demonstration of Program delivery of EPBC Act required outcomes	62

Figures

Figure 1-1 The strategic assessment process	3
Figure 4-1: Steps used to prioritise and group Specified Protected Matters	43
Figure 4-2: Percentage of all high and very high risk results ‘by activity’	50
Figure 4-3: Percentage of all high and very high risk results ‘by hazard’	51

Glossary of terms and abbreviations

Term	Meaning
BBAM	Biobanking Assessment Methodology
Blue Book	NSW Department of Housing manual <i>Managing Urban Stormwater: Soils and Construction</i>
CAMBA	China-Australia Migratory Bird Agreement
CEMP	Construction Environmental Management Plan
CEMS	Contractors Environmental Management System
CMA	Catchment Management Area
DECC	Former NSW Department of Environment and Climate Change (now OEH)
DEWHA	Former Australian Government Department of Environment, Water, Heritage and the Arts (now DotE)
DotE	Australian Government Department of the Environment
DPI	NSW Department of Primary Industries
DUAP/DPE	Former NSW Department of Urban Affairs and Planning (now Department of Planning and Environment)
EEC	Endangered Ecological Community
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EP&A Act	NSW <i>Environmental Planning & Assessment Act 1979</i>
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
EPS	Environmental Performance System
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
FM Act	NSW <i>Fisheries Management Act 1994</i>
ILC	Infrastructure Lifecycle Management System
JAMBA	Japan-Australia Migratory Bird Agreement
MNES	Matters of National Environmental Significance
MoU	Memorandum of Understanding
NCR	Non Conformance Report
OEH	NSW Office of Environment and Heritage
PEI	Preliminary Environmental Investigation
PEMP	Project Environmental Management Plan
PMST	Protected Matters Search Tool
Program	Roads and Maritime guidelines and procedures for environmental assessment and subsequent decision-making under Part 5 of the EP&A Act
REF	Review of Environmental Factors
RES	Regional Environmental Staff

Term	Meaning
Roads and Maritime	Roads and Maritime Services NSW
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
RTA	Former Roads and Traffic Authority NSW (now Roads and Maritime Services NSW)
Specified Protected Matters	Nationally listed threatened species and ecological communities protected by Sections 18 and 18A of the EPBC Act and listed migratory species protected by Sections 20 and 20A of the EPBC Act.
SIS	Species Impact Statement
SWMP	Soil and Water Management Plan
Threatened Ecological Communities	Threatened ecological communities are groups of native plants, animals and other organisms that naturally occur together in a unique habitat and are threatened with extinction. Commonwealth threatened ecological communities are listed in the EPBC Act.
TSC Act	NSW <i>Threatened Species Conservation Act 1995</i>
TSPD	Threatened Species Profile Database

Executive Summary

Background

The Australian Government and NSW Roads and Maritime Services (Roads and Maritime) have entered into an agreement under Section 146 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to undertake a strategic assessment. This considers the impacts on nominated 'Specified Protected Matters' from implementing a Program comprising Roads and Maritime processes and commitments with respect to environmental assessment and decision-making for activities subject to Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

In the Section 146 Agreement for this strategic assessment, the Program is defined as 'guidelines for the application of Part 5 (excluding Part 5.1) of the EP&A Act, and subsequent decision-making, in relation to the undertaking of road and traffic management works by, or on behalf of, Roads and Maritime with regard to Specified Protected Matters.

'Guidelines' for the application of Part 5 of the EP&A Act in relation to the undertaking of road and traffic management works, for the purposes of the strategic assessment, means a high level guide to the processes and commitments with respect to environmental assessment and decision-making.

These processes and commitments have been summarised and documented in the Program Report.

The Program is given practical effect by Roads and Maritime through the application of a range of policies and procedural guidelines.

For the purposes of the strategic assessment the Specified Protected Matters are:

- Nationally listed threatened species and ecological communities protected by Sections 18 and 18A of the EPBC Act
- Listed migratory species protected by Sections 20 and 20A of the EPBC Act.

The strategic assessment comprises three key reports:

- **The Program Report** – which describes the 'Program' and presents the commitments and undertakings for protection of the Specified Protected Matters (this report is provided separately)
- **The Strategic Assessment Report** (this report) - which provides a comprehensive assessment of the impact of the Program on the Specified Protected Matters
- **Supplementary Report** - outlines public comments on the draft Program Report and Strategic Assessment Report and demonstrates how those comments have been addressed.

The reports have been prepared in accordance with Terms of Reference and the Strategic Assessment Agreement. The final reports will be submitted to the Australian Government Minister for the Environment for consideration on whether to endorse the Program. If the Program is endorsed, the Minister can then consider approving a class of actions under the EPBC Act. In this case, the class of actions will be those road and traffic management activities undertaken by Roads and Maritime following assessment under Part 5 of the EP&A Act.

The key outcomes intended to be delivered by the Program are summarised in Table E-1 below.

Table E-1: Key Program outcomes

Specified protected matter	Key outcomes
Listed threatened species and ecological communities	The survival and conservation status of listed threatened species and ecological communities will be promoted and enhanced, including through the conservation of critical habitat and other measures contained in any recovery plans, threat abatement plans or conservation advices.
Listed migratory species	The survival and conservation status of listed migratory species and their critical habitat will be promoted and enhanced.

Benefits

The strategic assessment will improve efficiencies in decision-making by avoiding duplication while ensuring environmental assessment standards and protection are maintained. It will assist in timely delivery of projects supporting economic development and community access to employment, education and services. In addition, it will provide a single environmental assessment process, facilitating community awareness and engagement in decision-making.

The Program

The objective of the Program is to ensure that road and traffic management activities undertaken by Roads and Maritime are assessed and delivered in a way that provides protection for the Specified Protected Matters.

The Program comprises processes and commitments with respect to environmental assessment and decision-making for activities subject to Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The Program is supported by procedural guidelines and policies developed by Roads and Maritime Services to assist officers in their environmental assessment work. It relates only to smaller-scale projects that are assessed and determined by Roads and Maritime Services under Part 5 of the EP&A Act – usually by way of a Review of Environmental Factors (REF).

Additionally the Program includes commitments with respect to:

- Approach to implementation of the principles of ESD and application of the hierarchy of avoid, minimise, mitigating and offsetting environmental impacts
- Environmental management policies, including for environmental impact assessment
- Biodiversity assessment and management
- Community and stakeholder consultation
- Project implementation and management
- Monitoring, auditing and incident management
- Adaptive management
- Environmental awareness and training processes.

Case studies are provided in this Strategic Assessment Report to illustrate how Roads and Maritime implements these commitments in practice.

The Strategic Assessment applies to the area where Roads and Maritime has functional jurisdiction within the state of NSW, as set out in the NSW *Roads Act 1993*, with the

exception of road projects within the area subject to the Western Sydney Growth Centres Strategic Assessment.

The duration for the Program is anticipated to be 25 years.

Purpose of the Strategic Assessment Report

The purpose of the Strategic Assessment Report is to assess whether the key outcomes (refer Table E-1 above) will be delivered by the Program, including consideration of the risks to Specified Protected Matters as a result of implementing the Program.

The Strategic Assessment Report provides further detail on how Roads and Maritime will deliver the commitments outlined in the Program and demonstrates how the Program meets the objectives of the EPBC Act, including how Roads and Maritime:

- Protects the environment, especially Specified Protected Matters
- Promotes ecologically sustainable development
- Promotes the conservation of biodiversity
- Promotes a cooperative approach to the protection and management of biodiversity and Specified Protected Matters
- Assists in the cooperative implementation of Australia's environmental responsibilities
- Recognises and promotes the role and knowledge of Indigenous peoples in the conservation of biodiversity.

Identification of the Specified Protected Matters

There are 615 species and 33 threatened ecological communities listed under the EPBC Act (Specified Protected Matters) that were identified as applicable to the Program. This list was prioritised to 223 species and 31 communities that required detailed assessment.

After review and re-assessment by an expert review panel, the species and communities were assigned to 39 groups for impact assessment purposes. The Groups are:

- Priority fauna (eight groups, 35 species)
- Priority flora (16 groups, 180 species)
- Priority vegetation communities (seven groups, 30 communities)
- Of interest species (eight groups, consisting of eight species and one vegetation community).

Key hazards of the Program

The key impacts (or hazards) associated with implementation of the Program were identified based on Roads and Maritime's published *Biodiversity Guidelines*. These are:

- Loss of native vegetation
- Loss of habitat for native flora and fauna
- Direct mortality of native fauna
- Loss of connectivity for flora and fauna
- Loss of foraging resources for foraging and nesting fauna
- Fragmentation of vegetation resulting in edge effects, isolation and barrier effects
- Disturbance effects from noise, light and wind turbulence
- Water quality changes as a result of works in or adjacent to aquatic habitats and alterations to flow

- Invasion and spread of weeds and pest fauna species
- Spread of pathogens.

Assessment of the Program impact on the Specified Protected Matters

A risk assessment approach was used to assess the impacts of the Program's commitments on the Specified Protected Matters. A species impact profile was prepared for each of the 39 groups and then assessed against the key hazards. That included consideration of the likelihood of those hazards occurring and the consequences for each of the Specified Protected Matters.

The assessment indicated that implementation of the Program's commitments would provide a robust process to minimise the likelihood of unacceptable and unsustainable impacts arising from Roads and Maritime activities. This is on the basis that the Program, if applied consistently and comprehensively, would provide clear mechanisms to avoid and minimise impacts to Specified Protected Matters from project inception through to on-ground delivery. In addition, where unavoidable impacts may occur, the Program makes provision for mitigation measures to be applied and, as last resort, for offsets to be delivered. This approach recognises that the nature of Roads and Maritime activities means that while avoiding impacts is always the first priority, it is not always possible to achieve.

Taken collectively, it is this package of actions within the Program that will assist Roads and Maritime support long-term conservation objectives for Specified Protected Matters, consistent with the principles of ESD and the objects of the EPBC Act.

Assessment of the Program also indicates that it would be consistent with the objects of the EPBC Act. In particular the Program would promote the requirement to address the principles of ESD at all stages of development, including the application of the hierarchy of avoid, minimise, mitigate and offset in the planning and assessment processes.

Program evaluation and review

To ensure the effectiveness of the Program, Roads and Maritime recognise that safeguarding Specified Protected Matters is an on-going task. Accordingly ongoing program evaluation and review will be fundamental in ensuring the outcomes are achieved. This will include regular review of performance, adaptive management measures (including implementation of alternative forms of mitigation and/or corrective actions if required), targeted monitoring and regular reporting.

1 Introduction

1.1 Background

Certain road and traffic management activities undertaken by Roads and Maritime require environmental assessment under both Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These are activities not classified to be of state significance by the EP&A Act, and are usually assessed as not likely to have a significant impact on matters of national environmental significance (MNES) listed under the EPBC Act. Typical examples include: new overtaking lanes for existing roads; short sections of new road, including duplications; bridge replacement projects; and a range of routine maintenance and safety works.

On 14 August 2014 the Australian Government entered into an agreement with the New South Wales Roads and Maritime Services (Roads and Maritime) to undertake a strategic assessment of road and traffic management works assessed under Part 5 of the NSW EP&A Act. The strategic assessment has been undertaken in accordance with Section 146 of the EPBC Act.

The strategic assessment examines the impacts of Roads and Maritime processes and commitments with respect to environmental assessment and decision-making for activities subject to Part 5 of the NSW EP&A Act (the Program) on Specified Protected Matters.

For the purposes of the strategic assessment the Specified Protected Matters are:

- Nationally listed threatened species and ecological communities protected by Sections 18 and 18A of the EPBC Act
- Listed migratory species protected by Sections 20 and 20A of the EPBC Act.

If the strategic assessment is approved by the Australian Government Minister for the Environment, the outcome will be that Roads and Maritime activities currently assessed under Part 5 of the EP&A Act will no longer require an additional Australian Government approval with respect to the Specified Protected Matters above. This will:

- Improve efficiencies in decision-making by avoiding duplication
- Ensure standards in environmental assessment and protection continue to be maintained.

If Roads and Maritime intends to undertake Part 5 activities that may impact on other MNES, then relevant assessment and approval requirements under the EPBC Act will apply to these.

1.2 Structure of the Strategic Assessment Report

This report has been prepared to support the Program Report and assist the Australian Government Minister for the Environment to assess the Program and consider whether to endorse it under Section 146 of the EPBC Act. The report has been structured to reflect the requirements of the Terms of Reference as follows:

- **Chapter 1** - (this Chapter) provides background to the Strategic Assessment

- **Chapter 2** - provides information on the purpose of the Strategic Assessment Report and detail regarding the Program
- **Chapter 3** - provides details of the Program, including information on how the Program applies the ‘avoid, minimise, mitigate and offset’ hierarchy, identifies possible impacts on Specified Protected Matters as a result of Roads and Maritime activities and how potential impacts are minimised and subsequently assessed. It also identifies the adaptive management strategies that form part of the Program and how the Program addresses uncertainty
- **Chapter 4** - describes the approach taken by Roads and Maritime in defining the ‘road and road related activities’ subject to the Program, the Specified Protected Matters considered as part of the Strategic Assessment and the risk assessment process applied in considering the impact of the Program on Specified Protected Matters. It also provides a discussion of the risk analysis results, including demonstration of how the Program manages identified risks to Specified Protected Matters
- **Chapter 5** - identifies how the Program meets the requirements of the EPBC Act with respect to Commonwealth listed threatened species, communities and migratory species. An overview of Roads and Maritime safeguards under the Program is also provided
- **Chapter 6** - summarises, in the context of the objects of the EPBC Act, the broad approach and commitments applied by Roads and Maritime in protecting and managing Specified Protected Matters. It also describes how the Program will support the survival or conservation status of Specified Protected Matters
- **Chapter 7** - identifies the approach to ongoing monitoring, auditing, review and (if necessary) modification of the Program, including governance arrangements within Roads and Maritime relevant to the ongoing management of the Program
- **Chapter 8** - provides a list of references used in developing this Strategic Assessment Report.

1.3 Strategic Assessment Process

Strategic assessments under Part 10 of the EPBC Act offer the opportunity to examine the environmental consequences of activities and related decision-making processes at a scale and timeframe above that of individual projects. It is an important mechanism to enable a broader view of steps and options to balance conservation and development objectives in support of achieving the objects of the EPBC Act, compared to site-by-site assessment processes. That includes consideration of cumulative outcomes.

At a broad level, the strategic assessment involves two components:

1. Assessment and endorsement of a ‘policy, plan or program’
2. Approval of actions (or classes of actions) that are associated with the policy, plan or program.

As identified in the Australian Government’s *A Guide to Undertaking Strategic Assessments*, the strategic assessment process is flexible and is developed collaboratively between the Australian Government and the strategic assessment partner. The key steps are illustrated in Figure 1-1 below.

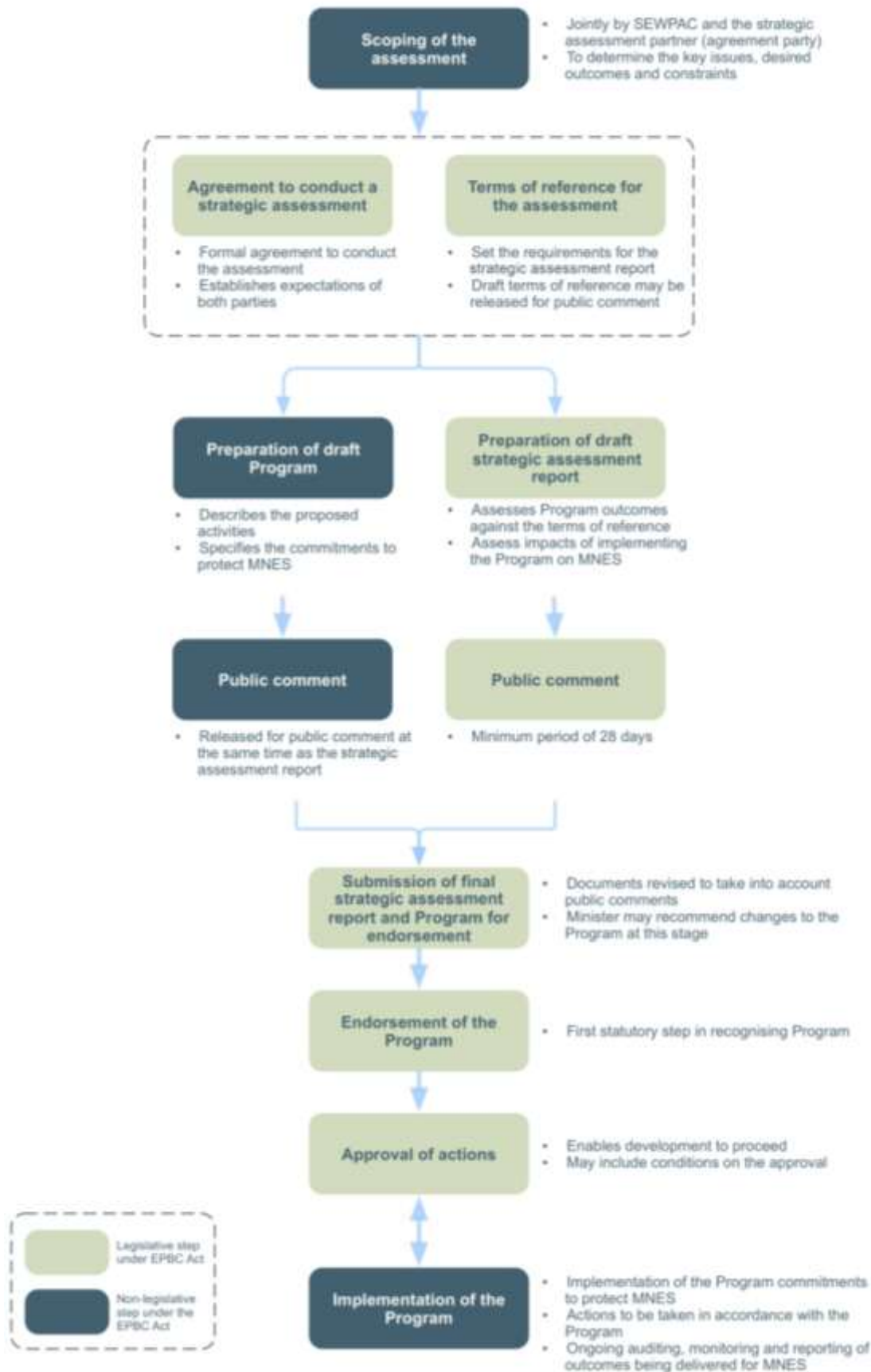


Figure 1-1 The strategic assessment process
(SEWPAC, 2013)

1.4 Timeframe for this Strategic Assessment

The proposed timeframe for this strategic assessment is outlined in Table 1-1 below.

Table 1-1 Timeframe for the strategic assessment

Strategic assessment stage	Timing
Strategic Assessment Agreement	14 August 2014
Terms of Reference for the Strategic Assessment	14 August 2014
Public comment on Program and draft Strategic Assessment Report. Statutory consultation period – minimum 28 days.	December 2014 to February 2015
Supplementary Report, Final Strategic Assessment Report and Final Program Report	May 2015
Potential endorsement of the Program (Australian Government Minister for the Environment)	May-June 2015
Potential approval of actions/classes (Australian Government Minister for the Environment)	May-June 2015

1.5 Benefits of the Program

The Program allows Roads and Maritime to demonstrate its capacity to support positive environmental outcomes and address cumulative impacts of its road and traffic management activities. Specifically, the commitments contained in the Program will:

- Promote conservation of MNES, and particularly the Specified Protected Matters. This is primarily demonstrated through Roads and Maritime's application of:
 - The 'avoid, minimise, mitigate, offset' hierarchy
 - Best practice environmental and biodiversity impact assessment
 - Community consultation processes
 - Practical adaptive management during implementation of road activities through inspections and monitoring arrangements
- Support balanced project outcomes, delivering well-planned essential community infrastructure that integrates economic, environmental and social considerations, consistent with the principles of ecologically sustainable development (ESD).

1.6 Finalising the Program

The Program Report and this Strategic Assessment Report have been finalised following consideration of submissions received during the public display period and to take account of a range of other relevant matters. That includes the NSW Bilateral Agreement regarding environmental assessment, which came into effect in February 2015.

As part of this process, Roads and Maritime has reviewed and updated a range of procedures, policies and guidelines to ensure they facilitate implementation of the commitments detailed in the strategic assessment. These underpin Roads and Maritime's approach to supporting the long-term survival and conservation of the Specified Protected Matters. As noted in section 3, Roads and Maritime intends to keep its environmental planning and impact assessment practices under review to ensure they remain effective to delivery of the strategic assessment commitments.

The final Program Report, Strategic Assessment Report and Supplementary Report will be submitted to the Australian Government Minister for the Environment for endorsement and approval of a class of actions.

2 Purpose and description

This Strategic Assessment Report is a submission made under Part 10 of the EPBC Act. The purpose of the Strategic Assessment Report is to assess the impacts on Specified Protected Matters that may result from implementing the Roads and Maritime Program. Details of the Program are summarised in Chapter 3 and more fully described in the Program Report.

2.1 Purpose of the Strategic Assessment Report

When deciding whether to endorse the Program, and whether to approve a class of actions associated with the Program, the Australian Government Minister for the Environment must be satisfied that the Strategic Assessment Report adequately addresses the Terms of Reference and the requirements of Section 146K and 146L of the EPBC Act.

The Terms of Reference are provided in Appendix A, and are cross-referenced to relevant sections of the Strategic Assessment Report.

In accordance with the Terms of Reference the Minister must be satisfied that:

- a) The Strategic Assessment Report adequately addresses the impacts of actions under the Program on Specified Protected Matters
- b) Any recommended modifications to the Program, or modifications having the same effect, have been made.

In determining whether or not to endorse the Program, the Minister will have regard to the extent to which the Program meets the objects of the EPBC Act. In particular, that it:

- Protects the environment, especially Specified Protected Matters
- Promotes ecologically sustainable development
- Promotes the conservation of biodiversity
- Promotes a cooperative approach to the protection and management of biodiversity and Specified Protected Matters
- Assists in the cooperative implementation of Australia's environmental responsibilities
- Recognises and promotes the role and knowledge of Indigenous peoples in the conservation of biodiversity.

The Strategic Assessment Report assesses whether these outcomes will be delivered by the Program, including consideration of the risks to Specified Protected Matters as a result of implementing the Program.

2.2 Need and justification for the Program

2.2.1 *Program context*

The strategic direction for Roads and Maritime activities are established primarily through the priorities in *NSW 2021: a plan to make NSW number one*, the *NSW Long Term Transport Master Plan* and the *State Infrastructure Strategy 2012*. Together, these provide the NSW Government's plan for transport infrastructure provision across the state.

As noted in the Program Report, Roads and Maritime activities are aligned with delivering the strategic priorities set out in these plans. In the planning, design, assessment and implementation of road and traffic management projects Roads and Maritime recognises that protection of all aspects of the environment must be a driving consideration.

2.2.2 Need for the Program

Roads and Maritime has developed and continues to refine a comprehensive suite of environmental assessment policies and procedural guidelines to inform decision-making for road and traffic management activities. Collectively, these provide the practical tools by which the Program will be delivered and have been developed consistent with Roads and Maritime’s corporate project delivery objectives as outlined in Table 2-1.

They are also an essential and core part of Roads and Maritime’s approach to responding to community expectations and meeting statutory obligations with respect to the environment, ensuring that activities are planned and delivered to avoid and minimise risks to the environment. That includes requirements under Part 5 of the EP&A Act for Roads and Maritime 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*’ (refer Section 2.4 below).

Table 2-1 Roads and Maritime project delivery objectives

Objective	Description
Simplicity	Systems and processes are made as simple and efficient as possible and any added complexity is in proportion to the risks being managed.
Integration	Roads and Maritime business objectives and services are planned and delivered in an integrated way across the organisation.
Accountability	Managers at all levels are provided with the necessary authority and skills to efficiently deliver organisational objectives and they are then held accountable for their performance.
Efficiency	The organisation makes the most effective use of all its resources and people, collaborative working arrangements are encouraged and any new resource and staffing requirements are offset by savings elsewhere.
Ongoing improvement	Strong mechanisms are put in place to ensure a continuous focus on improvement and cost reduction.

Roads and Maritime is committed, through implementation of the Program, to ensuring that road and traffic management activities subject to assessment under Part 5 of the EP&A Act will not have an unacceptable impact on Specified Protected Matters. This is achieved by:

- Carrying out activities in a manner consistent with the principles of ecologically sustainable development – a key objective of the EPBC Act
- Application of the ‘avoid, minimise, mitigate and offset’ hierarchy from the earliest stages of project development and planning
- Application of best practice environmental and biodiversity assessment practices and management techniques
- Provision of appropriate and timely opportunities for community consultation and input to decision-making
- Implementing risk-based systems for project compliance and monitoring, in support of adaptive management during project delivery.

The Specified Protected Matters that are included in this Strategic Assessment and the key outcomes for each are set out in Table 2-2.

Table 2-2: Specified Protected Matters and key outcomes sought from the Program

EPBC Act Part 3 – Specified Protected Matter	Key outcomes sought from the Program
Listed threatened species and ecological communities	The survival and conservation status of listed species and ecological communities is promoted and enhanced, including through the conservation of habitat critical to the survival of a species or community and other measures contained in any recovery plans, threat abatement plans or conservation advices.
Listed migratory species	The survival and conservation status of migratory species and their critical habitat is promoted and enhanced, consistent with Australia’s international obligations.

2.3 Strategic Assessment area and duration

The Strategic Assessment applies to the area where Roads and Maritime has functional jurisdiction within the state of NSW, as set out in the *NSW Roads Act 1993*.

The only exception are those Part 5 activities being undertaken by Roads and Maritime within the Western Sydney Growth Centres. These activities will continue to be assessed in accordance with applicable requirements of the Western Sydney Growth Centres Strategic Assessment and related approval.

The scope of the Program which is subject to the Strategic Assessment includes activities and decision-making with respect to road and traffic management works by Roads and Maritime that are subject to assessment under Part 5 of the EP&A Act. With the exception of the Western Sydney Growth Centres (noted above) that includes road work carried out in NSW on:

- Any freeway, highway or metropolitan main road, or
- Any other road (whether classified or not) where Roads and Maritime retains responsibility or is undertaking road work.

The expected duration of the Program is 25 years.

2.4 Program development

2.4.1 Role and responsibilities

Roads and Maritime is a NSW Government Agency established under the *Transport Administration Act 1988* (NSW). Roads and Maritime is a multi-modal transport agency within the broader Transport Cluster, known as Transport for NSW. Transport for NSW has responsibility for transport policy, planning and coordination functions, and the oversight of infrastructure delivery and asset management.

Roads and Maritime has specific responsibility for managing the operation of roads and waterways, designing and delivering initiatives, programs and projects that align to its core business model of *Build, Manage Journeys, Maintain and Enable*.

Activities undertaken by Roads and Maritime cover a vast spectrum of work, ranging from major new road infrastructure through to minor and routine maintenance activities such as line marking. It is responsible for managing the National Highway and State Road networks in NSW which carry about 70 per cent of all NSW traffic.

2.4.2 *Project management systems*

As discussed in Section 2.2.2 above, Roads and Maritime systems for environmental assessment and decision-making for road activities have been progressively developed and refined over many years. Roads and Maritime now has extensive project management system to support project delivery consistent with its broad customer responsibilities. The key drivers for the management system are to ensure that business objectives and services are planned and delivered in an integrated way across the organisation and that all legal requirements (including environmental obligations) are met.

The Roads and Maritime management system includes a framework of decision-making supported by guidance material that complies with the requirements of *ISO 9001-2008* (quality management systems). The management system (procedures, guidelines and templates for managing road projects) is applied to several Roads and Maritime functional areas including for minor projects and more substantial infrastructure.

Each functional area within Roads and Maritime operates according to a set of specific procedures, as well as following procedures common to all areas. In particular, all functional areas are required to actively contribute towards avoiding or minimising environmental impacts in undertaking all aspects of their work responsibilities. The key, standard environmental obligations include:

- **Environmental impact assessment** - Roads and Maritime has a statutory responsibility under the EP&A Act to consider the impacts of its activities on the environment and a statutory responsibility under the EPBC Act to consider the impacts of its activities on matters of national environmental significance. The environmental assessment process helps Roads and Maritime to:
 - Identify environmental impacts at an early stage in project development
 - Assess the impacts of a proposed activity on the environment before making the decision on whether to carry it out
 - Engage and consult with the community and obtain their input on options and the acceptability of impacts
 - Develop and assess measures to avoid, minimise or offset impacts.
- **Environmental management and compliance** – to ensure that Roads and Maritime construction and maintenance activities comply with contractual and legislative requirements.

Chapter 3 of this report provides details of Roads and Maritime's approach to environmental management and impact assessment.

2.5 Legislative context

2.5.1 Legislative framework

The EP&A Act and the Environmental Planning and Assessment Regulation 2000 (the Regulation) provide the primary legislative basis for planning and environmental assessment in NSW. The objects of the EP&A Act include:

- The protection of the environment and the proper management and development of natural resources
- To encourage ecologically sustainable development (ESD).

The EP&A Act adopts the following definition of ESD.

‘Ecologically sustainable development can be achieved through the implementation of the following principles and programs:

- (a) the precautionary principle - namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:
 - (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
 - (ii) an assessment of the risk-weighted consequences of various options,**
- (b) inter-generational equity - namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,*
- (c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,*
- (d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:
 - (i) polluter pays - that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,*
 - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,*
 - (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems’.**

The EP&A Act includes provisions to ensure that the potential environmental impacts of a development or activity are rigorously assessed and considered in the decision-making process. Road and traffic management activities undertaken by Roads and Maritime are dealt with via one of the following three mechanisms under the EP&A Act:

1. **Exempt development** – which requires no formal environmental assessment as it has been identified as having minimal environmental impact (for example, safety signage)
2. **Development that needs consent** – subject to Part 4 of the EP&A Act. This includes both local and state significant development (Part 4.1). The consent authority is usually the relevant local council or Minister for Planning
3. **Development that does not need consent** - subject to Part 5 of the EP&A Act, which requires the full range of environmental impacts associated with an activity to be considered before it may proceed

4. **State Significant Infrastructure** - subject to assessment under Part 5.1 of the EP&A Act and requires approval of the Minister for Planning.

The strategic assessment and the Program subject to the assessment is in respect to activities that fall within the third category above, and are subject to Part 5 of the EP&A Act.

Under Part 5 of the EP&A Act proponents must '*examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity*'. The matters listed in clause 228 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) apply as the mandatory minimum statutory requirements.

In addition there is a legislated guideline entitled *Is an EIS required? – Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979* which must also be considered.

If a Roads and Maritime activity being assessed under Part 5 of the EP&A Act is likely to have a significant impact on critical habitat, threatened species, populations or communities listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) or the *Fisheries Management Act 1994* (FM Act) there is also a requirement to prepare a Species Impact Statement (SIS) and obtain the concurrence (a form of separate approval / agreement) of the Office of Environment and Heritage and/or NSW Fisheries to undertake the activity. This is in addition to the preparation of relevant environmental impact assessment documentation.

2.5.2 *Environmental impact assessment process*

Preparation of the environmental impact assessment

Roads and Maritime is responsible for ensuring the environmental impacts of its activities are assessed in accordance with statutory requirements. In preparing environmental assessments for activities under Part 5 of the EP&A Act, Roads and Maritime engages suitably qualified and experienced planning and environmental experts. A typical Roads and Maritime activity will involve a range of experts with skills in biodiversity, Aboriginal and historic heritage, hydrology, traffic planning, noise and air quality, and social and economic assessment.

Advice and information from these experts, and consultation with the community, other NSW agencies and local government is then used to prepare the environmental assessment documentation. This is usually in the form of document known as a Review of Environmental Factors (REF). Ultimately, Roads and Maritime is the proponent for the activity and is responsible for the content and quality of the environmental assessment.

The process for decision-making

Roads and Maritime is the determining authority for all activities that it proposes to undertake and that are assessed under Part 5 of the EP&A Act. This is the case for all public authority proponents. For example, agencies responsible for the provision of public transport facilities, utilities, and the management of national parks, are also required to undertake environmental assessment of their activities to meet the requirements of Part 5 of the EP&A Act.

Roads and Maritime has internal systems to ensure separation and transparency in decision-making. These ensure that responsibility for the final determination of REFs and the

decision to proceed with an activity is at a sufficiently senior level (tailored to the size and scale of the project) and independent of the person responsible for developing the project and undertaking the environmental assessment.

In cases where there are likely to be significant impacts on threatened species, populations and communities listed under the NSW TSC Act or FM Act, the activity may only be carried out after an SIS has been prepared and approvals obtained from the relevant regulatory authorities.

For further details on the decision making process, see Section 3.5 below.

Public consultation

There is no statutory requirement to publicly exhibit or seek comment on activities being assessed under Part 5 of the EP&A Act, with exception of when an SIS is prepared.

In practice, and consistent with its *Customer Charter*, Roads and Maritime has adopted procedures to ensure that appropriate consultation occurs and that opportunities for community input are provided. That includes during early development of options and as part of the environmental assessment process.

In the case of an SIS that has been prepared to accompany an REF, there are legislated public notification and exhibition requirements. This includes a mandatory public exhibition period of 30 days and a requirement for consideration of submissions received.

Modifications

The complexities and technical challenges involved in undertaking road and traffic management works regularly necessitate the minor adjustment or refinement of elements of an activity. Modifications may also be proposed as opportunities arise during construction to reduce or alter the extent of environmental impact that may originally have been expected, or to use alternative delivery techniques not originally considered practicable.

Roads and Maritime recognises the importance of taking the environmental impact of project modifications into account. This is necessary to ensure that the environmental consequences remain within scope of the original assessment or will be reduced or better managed. Roads and Maritime has adopted processes and procedures to determine whether or not further assessment is required. This may also prompt re-engagement with the community.

Life of the environmental assessment and the decision

The duty to consider the environmental impact for an activity assessed under Part 5 of the EP&A Act is ongoing, and the duty on the public authority continues right up to and during the carrying out of the activity. Roads and Maritime recognises this responsibility and, as discussed in Chapter 3, applies a number of measures and requirements to ensure environmental impacts continue to be scrutinised and managed through the entire life cycle of a project.

In some cases, the environmental assessment process may be completed but the activity does not commence for a period of time. For example, while final funding arrangements are being resolved or design refinements occur. In these circumstances, Roads and Maritime recognises the need to ensure the currency of the original assessment and may take steps to review or update the environmental information for the project. That can include re-checking current threatened species listings, any updated or new guidelines, or revisions to project biodiversity management plans.

2.6 Actions under the Program

As described in Section 2.4 above, Roads and Maritime is responsible for a significant community asset (the road network) and undertakes a range of activities to ensure that the asset is developed and maintained to an optimal standard. This includes large infrastructure projects of state significance through to smaller scale projects such as new overtaking lanes, short realignments or short stretches of new road, bridge replacements and ongoing maintenance activities.

The Program (and this Strategic Assessment) addresses those smaller scale projects that are subject to Part 5 of the EP&A Act. This includes all road and traffic management activities with the exception of:

- **Activities of state significance** (Part 5.1 of the EP&A Act) – these activities require approval from, or are declared by, the Minister for Planning. These are major state infrastructure projects where the impacts on the environment are considered to be significant
- **Minimal impact activities** - these activities do not require any environmental assessment. These are generally known as ‘exempt development’ and typically comprise very small-scale works that have been identified in an environmental planning instrument (EPI) as having only minimal environmental impact
- **Maritime activities** – such as new ferry wharves, navigational aids and moorings.

Detail regarding the approach used to define the suite of Roads and Maritime activities covered by the Program is provided in Section 4.2.

For the purposes of carrying out the Strategic Assessment, all activities have been allocated to one of eight groups based on similarities in the nature of work involved and likely impacts on the Specified Protected Matters:

- Group 1 - Routine and minor work - preparatory, rehabilitation or investigative
- Group 2 - Routine and minor work - supporting infrastructure (such as signage/ lighting)
- Group 3 - Routine and minor work - infrastructure work within current road footprint
- Group 4 - Ancillary facilities (such as work compounds and rest areas)
- Group 5 - Supporting infrastructure - basins, drains and culverts
- Group 6 - Utilities and fencing
- Group 7 - Work within waterways (such as snag removal and bank stabilisation)
- Group 8 - Primary infrastructure work (including carriageways, bridges and batters).

2.7 Program implementation and review

2.7.1 *Current implementation of the Program*

Roads and Maritime project management system

Roads and Maritime uses a tailored approach to project managing its activities, accounting for the size, complexity and cost of road and traffic management proposals. These provide key mechanisms and decision-making ‘gateways’ to support the consideration of environmental issues, including the Specified Protected Matters, upfront in project planning. In particular, these project management systems provide opportunity for early consideration of actions that can be taken to avoid and minimise environmental impacts.

As discussed in Section 2.4.2 above, Roads and Maritime have procedures that apply to all projects (common procedures) and procedures that are specific for minor projects and more substantial infrastructure. More substantial infrastructure projects are identified as typically having higher cost, risk or complexity constraints.

The project management system requires early and ongoing consideration of environmental issues in the project development process, including:

- Assessment of risks, including environmental risks, at project inception
- Preparation of a risk management plan as a key part of the project management plan, including identification of environmental risks and contingencies
- Preparation of an environmental action plan. Requires preparation and maintenance of and environment risk register that lists environment-related risks identified in the risk analysis management process

Further detail regarding the environmental requirements incorporated into the Roads and Maritime project management system is provided in Chapter 3 below.

Environmental policies, procedures and procedural guidelines

Similar to the approach to overall project management, Roads and Maritime also applies a fit-for-purpose approach to undertaking environmental assessment, ensuring that the level of investigation and assessment undertaken for activities is appropriate to the nature and intensity of potential environmental impacts and risk. This recognises that a range of smaller-scale, routine activities represent a low environmental risk, and can generally proceed with the application of suitable safeguards.

Roads and Maritime have a number of procedures that outline the approach to environmental impact assessment for minor projects and separately for more substantial infrastructure. An overview of the Roads and Maritime environmental impact assessment procedures is provided in Table 2-3 below.

Table 2-3: Overview of Roads and Maritime environmental assessment procedures

Project type	Detail of procedures
Minor projects	<p>The environmental assessment procedures for minor projects identify the steps, processes, responsibilities and guidance and tools necessary to progress a routine or minor work project through the environmental assessment process.</p> <p>Minor projects are generally those involving routine or minor works associated with existing roads. Examples include: sealing of existing unsealed roads; vegetation removal beyond previously cleared areas to improve vehicle safety; and installation of new rest stops. The impacts of minor works are managed through the application of standard environmental safeguards.</p>
More substantial infrastructure	<p>The Roads and Maritime <i>Environmental Assessment Procedure - Project review of environmental factors</i> applies to all other activities that are subject to the requirements of Part 5 of the EP&A Act.</p> <p>The Procedure sets out the steps, tasks and responsibilities for assessing environmental impacts, community consultation and decision-making. Roles and responsibilities are also established for a range of Roads and Maritime staff, including environmental specialists.</p>

Chapter 3 discusses in more detail the main elements of the procedures as they apply to the Specified Protected Matters.

2.7.2 *Ongoing adoption and implementation of the Program*

To measure the performance of the Program, a framework for evaluating, reporting and monitoring will be applied. Reviews will be conducted against the Terms of Reference and the results provided to the Australian Government Department of the Environment. The review framework will include:

- A review of the Program to commence after 12 months of operation, to be submitted within 18 months of Program endorsement
- A review of the Program every five years for the life of the Program to assess progress in achieving the objectives of the Program.

Roads and Maritime will also provide an annual report on its website regarding activities assessed under Part 5 of the EP&A Act that were identified as having a significant impact on the Specified Protected Matters. The report will:

- Identify the project
- Identify the Specified Protected Matters impacted by the activity
- Summarise the nature and extent of impacts on the Specified Protected Matters
- Summarise the public consultation process for the project
- Identify any mitigation or offset measures applied.

Detail regarding Roads and Maritime's approach to Program governance, evaluation and reporting is provided in Chapter 7.

3 Details of the Program

This Chapter describes Roads and Maritime's processes and commitments with respect to environmental assessment and decision-making for road and traffic management activities subject to Part 5 of the EP&A Act. These comprise the Program that is subject to the Strategic Assessment. The outcomes of the Program, as required by the EPBC Act, are also detailed.

The Program is given practical effect by Roads and Maritime through the application of a range of policies, procedures and processes. This Chapter details how this suite of planning, assessment and decision-making tools takes account of and supports protection of the Specified Protected Matters.

Where appropriate, measures are identified that Roads and Maritime intends to implement to improve the operation of its environmental assessment and decision-making processes to ensure the Program commitments are fulfilled.

Two hypothetical case studies are also included to illustrate how the Program commitments are given effect by Roads and Maritime.

3.1 Ecologically sustainable development

Program commitment one – ecologically sustainable development

Roads and Maritime will demonstrate due diligence in the provision of its services, manage its road and traffic management activities in a manner which is consistent with the principles of ESD, and continuously improve environmental performance.

Roads and Maritime endeavours to ensure that its road and traffic management activities are undertaken in a manner consistent with the principles of ecologically sustainable development (ESD), as set out in NSW and Australian Government legislation.

The Roads and Maritime *Environment Policy Statement 2012* articulates this commitment. The Roads and Maritime Environment Policy Statement 2012 articulates this commitment and the Roads and Maritime *EIA practice note - ecologically sustainable development* (refer Appendix B) provides practical guidance on the application of ESD principles at the project level.

Roads and Maritime implements this commitment in practice with respect to the planning, assessment and delivery of activities subject to Part 5 of the EP&A Act through the following key mechanisms:

- Implementation of an infrastructure lifecycle approach to support project delivery, which requires up-front identification of project environmental risks, preparation of environmental assessments, community involvement plans, and project business cases that include justification for the activity and take account of environmental, economic and social objectives
- Undertaking of comprehensive environmental impact assessments in accordance with Roads and Maritime's *Environment Assessment Procedure for Project Review of Environmental Factors* and the *Environmental Impact Assessment Practice Note – Ecologically Sustainable Development*
- Provision of offsets for road activities that have a residual significant impact on biodiversity, including the Specified Protected Matters

- Implementation of appropriate on-the-ground mitigation measures and environmental safeguards during the construction phase of an activity, in accordance with Roads and Maritime's *Biodiversity Guidelines*. That can include: pre-clearing inspections by qualified ecologists; establishment of exclusion zones; retention of woody debris and bushrock to assist in rehabilitation after works are completed; and measures to minimise weed and pathogen risks.

3.2 Applying the 'avoid, minimise, mitigate, offset' hierarchy

Program commitment two – protection hierarchy

Roads and Maritime will apply the 'avoid, minimise, mitigate and offset' hierarchy in undertaking its road and traffic management activities to ensure protection and avoid unacceptable impacts on the Specified Protected Matters. This will include:

- Seeking to avoid impacts as the highest priority
- Minimising and mitigating actions to reduce the extent and intensity of likely impacts
- Providing offsets where residual significant impacts occur for a Specified Protected Matter, with the appropriate offset for that Specified Protected Matter determined in accordance with a method identified in a Bilateral Agreement between the NSW and Australian Governments or otherwise agreed with, or endorsed by, the Australian Government Minister for the Environment.
- Assessment documentation for the activity provided to the RMS decision-maker will identify proposed offsets and include arrangements and timeframes for the securing of offsets

Program commitment three – infrastructure lifecycle

Roads and Maritime will apply an infrastructure lifecycle management approach to undertaking road and traffic management activities, which incorporates measures to consider, assess and avoid unacceptable impacts to Specified Protected Matters during all relevant phases of a project.

The hierarchy of avoiding, minimising, mitigating, and offsetting unavoidable impacts underpins the environmental impact assessment process for Roads and Maritime activities, consistent with NSW legislative requirements and best practice environmental planning approaches. As part of its responsibilities for planning and assessing road and traffic management under Part 5 of the EP&A Act, Roads and Maritime is specifically obliged to apply the precautionary principle, which is defined under the EP&A Act as:

'that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment.'

Roads and Maritime takes a pragmatic and practical approach to achieving these outcomes, recognising that best results will be achieved for the Specified Protected Matters by building in requirements into project planning systems.

3.2.1 Overview of the 'avoid, minimise, mitigate, offset' hierarchy

Roads and Maritime recognises the priority of applying the 'avoid, minimise, mitigate and offset' hierarchy in undertaking its road and traffic management activities to ensure protection of the Specified Protected Matters as follows:

Avoid

Roads and Maritime's first priority is to avoid impacts on Specified Protected Matters. Avoidance of impacts is achieved through the early consideration of environmental issues in the design development stages and primarily by locating activities away from areas where biodiversity values are expected to be high. This is supported through the detailed analysis of road options, selection of the preferred option and refinement of project designs. Community views are sought at key stages and are a critical input to decision-making.

Minimise

Where it is not possible to locate Roads and Maritime activities in areas that avoid impacts, projects are designed to minimise impacts as far as possible. That includes the application of measures such as road design refinements to reduce the scope of a project's overall impact. For example, by using retaining walls rather than embankments to reduce the overall project footprint, and incorporating other design features (such as bridges rather than culverts) to minimise impacts on Specified Protected Matters.

Mitigate

Mitigation is applied once all practicable steps to avoid or minimise impacts have been implemented and refers to measures applied to reduce the level of impact from activities undertaken during construction and operation. Roads and Maritime's *Biodiversity Guidelines* identify a range of mitigation techniques to be applied, including re-establishment of native vegetation after construction of a project, weed management and provision of supplementary fauna habitat (such as nest boxes for appropriate species). The extent of mitigation is typically defined through the commitments made in an REF (refer Section 3.3 below), which are then delivered via inclusion of environment protection specifications in project contracts.

Offset

In circumstances where all reasonable measures have been taken to firstly avoid and then minimise and mitigate impacts, but significant residual impacts will still occur, Roads and Maritime implements appropriate actions to ensure such impacts are offset.

A biodiversity offset is an action that is taken at a location away from an impacted site that aims to replace the biodiversity values lost by an activity. Offsets are a last resort after all options to avoid, minimise and mitigate impacts have been exhausted, and are an appropriate response to ensure that unavoidable impacts are not unacceptable with respect to the Specified Protected Matters. Offsets can be provided in a range of forms, including positive management interventions such as restoration of degraded habitat, and securing the in-perpetuity protection of lands of high conservation value.

Roads and Maritime acknowledges that offsets need to be applied on a 'like for like' basis for the Specified Protected Matters and that offsets need to be implemented within an appropriate timeframe that is as close as possible to the commencement of the project.

Roads and Maritime has a successful track record in developing and implementing offset strategies and makes this information publicly available (refer <http://www.rms.nsw.gov.au/about/environment/index.html>).

Roads and Maritime recognises that arrangements for calculating and obtaining appropriate offsets continue to evolve. In determining the type and nature of suitable offsets for a particular activity, Roads and Maritime applies relevant NSW Government policies and has a roads activity specific guideline for biodiversity offsets.

3.2.2 *Current implementation*

Practical steps currently taken by Roads and Maritime to deliver the commitment to apply the 'avoid, minimise, mitigate and offset' hierarchy include:

- Project management procedures that require preparation of a risk management plan, including identification of environmental risks and contingencies, and consultation with stakeholders to identify possible impacts or areas to be avoided
- Options analysis, including stakeholder input and preparation of a preliminary environmental investigation report for targeted projects
- Identification and community consultation on proposed and preferred options
- Comprehensive environmental impact assessments in accordance with Roads and Maritime's *Environment Assessment Procedure for Project Review of Environmental Factors* and procedures for biodiversity assessment (refer Section 3.3 below)
- Provision of offsets for projects having a residual significant impact on biodiversity, that are determined using an accepted, scientifically based method and which are secure and enduring
- Implementation of mitigation measures during construction, as set out in the Roads and Maritime *Biodiversity Guidelines*.

3.2.3 *Future improvements*

Roads and Maritime recognises that effective implementation of the 'avoid, minimise, mitigate and offset' hierarchy requires on-going continuous improvement. Roads and Maritime will continue to review and if necessary update:

- Project management systems to ensure the need to avoid or minimise unacceptable impacts to the Specified Protected Matters is addressed as early and explicitly as possible in the planning of a road or traffic management activity
- Procedures for environmental impact assessment to ensure clear documentation of measures taken to avoid, minimise, mitigate and offset impacts to the Specified Protected Matters
- Policies for offsetting residual biodiversity impacts.

3.3 Environmental impact assessment and management - guidelines and procedures

Program commitment four – environmental impact assessment

Roads and Maritime will undertake best practice and rigorous environmental impact assessment of its activities, in accordance with relevant environmental legislation.

To that end, Roads and Maritime will maintain and continually improve its guidelines and procedures for environmental impact assessment, ensuring that consideration of Specified Protected Matters are clearly addressed and that the avoid, minimise, mitigate and offset hierarchy is applied.

Roads and Maritime will consider relevant EPBC Act policy, plans and guidance material, including in relation to offsetting, as part of the activity assessment process.

Roads and Maritime will also ensure that the environmental impact assessment of road and traffic management activities identifies and incorporates appropriate safeguards and management measures for the Specified Protected Matters. These will follow the SMARTA approach, meaning they will be: specific to the activity and site; measurable; achievable; realistic; time-driven; and auditable.

Roads and Maritime will not proceed with an action (that is subject to the strategic assessment) that will have an unacceptable impact on any specified protected matter.

Program commitment five – biodiversity assessment

Roads and Maritime will undertake best practice and rigorous assessment of the potential impacts of its activities on biodiversity, as an integral part of project environmental impact assessment, and taking into account current and up-to-date information on species and communities listed under the EPBC Act.

To that end, Roads and Maritime will maintain and continually improve its guidelines and procedures for biodiversity assessment, ensuring that consideration of the Specified Protected Matters are clearly addressed, using appropriately qualified and experienced ecologists and taking account of up-to-date information from available sources and targeted field surveys. Roads and Maritime will ensure its assessment processes reflect accepted methodologies that are robust and repeatable.

Roads and Maritime will also maintain and continually improve its procedures with respect to management of biodiversity during the construction, operation and maintenance phases of an activity.

Program commitment six – environment protection

Roads and Maritime will maintain and continually improve its guidelines and procedures for broader environmental protection during the undertaking of road and traffic management activities, recognising that these support the conservation of the Specified Protected Matters.

3.3.1 Overview of EIA procedures

Roads and Maritime has prepared and applies a comprehensive framework of EIA policies, guidelines and procedures to ensure that all road and traffic management activities subject to Part 5 of the EP&A Act are assessed in accordance with statutory requirements and community expectations. That includes application of ESD principles and demonstration of the ‘avoid, minimise, mitigate and offset’ hierarchy.

Roads and Maritime tailors the level of environment assessment required for an activity to suit expected impacts, complexity and scale. Works within or immediately adjacent to an existing disturbed road corridor are considered low risk and can generally be managed through the application of standard environmental safeguards. This scale of activity is extremely unlikely to ever have a significant impact on the Specified Protected Matters.

Relatively larger and more complex projects outside of, or that significantly alter or expand, existing road corridors require more detailed assessed and consideration. These are considered a greater risk of impacting the Specified Protected Matters. Examples would include: bridge replacement projects; new overtaking lanes along existing roads; and short sections of new road.

The Roads and Maritime *Environment Assessment Procedure for Project Review of Environmental Factors* and related guidelines for biodiversity assessment provide the key mechanism for assessing the potential impacts of activity subject to Part 5 of the EP&A Act. That includes specific consideration of impacts associated with the Specified Protected Matters, drawing on field survey and assessments undertaken by experienced ecologists. The assessment documentation (a Review of Environmental Factors) satisfies the statutory obligation under Part 5 of the EP&A Act for Roads and Maritime 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*’.

In accordance with adopted Roads and Maritime guidelines, the REF document includes sections that discuss the scope of the project, its need and justification, alternatives and options considered, the statutory planning framework, environmental impact assessment,

environmental management (safeguards and mitigation) and justification (including consideration of ESD).

3.3.2 *Current implementation*

Roads and Maritime procedures and guidelines set out requirements for delivering on the commitments for best practice environmental impact assessment. The Roads and Maritime *Environment Assessment Procedure for Project Review of Environmental Factors*, supported by biodiversity guidelines, sets out the key requirements, including consideration of the Specified Protected Matters. These include:

- Providing full descriptions of all aspects of the activity, including details of the design, construction activities, ancillary facilities, utility adjustments, property acquisition and related projects
- Explaining the need and justification for the activity and any options considered, including the rationale for the preferred option
- Describing the existing environment for all key environmental aspects, including soils and geology, waterways and water quality, heritage, biodiversity and landscape character
- Identification of biodiversity that may be affected by the proposal, based on searches of relevant databases and field survey, including for threatened species and communities listed under both NSW and Australian Government legislation
- Minimum requirements for field survey using accepted scientific methods and following published guidelines. Examples include:
 - *Environmental Impact Assessment Guidelines for the Green and Golden Bell Frog (Litoria aurea)* (OEH 2003)
 - *Survey Guidelines for Australia's Threatened Bats, Survey Guidelines for Australia's Threatened Birds and Survey Guidelines for Australia's Threatened Frogs* (all Commonwealth of Australia 2010).
- Assessment of the direct, indirect and cumulative impacts on biodiversity. That includes application of the *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (Department of the Environment, 2013), and consideration of applicable recovery plans, threat abatement plans and conservation guidance
- Assessment of:
 - *The resilience of the environment to cope with the impacts*
 - *The permanency or reversibility of impacts*
 - *How adequately the impacts can be mitigated or managed*
 - *Compliance with any performance criteria, standards, plans or policies*
 - *Whether additional studies are needed to adequately assess impacts or to develop management measures*
- Identification of relevant mitigation measures and environmental safeguards, which are then subsequently incorporated into contract requirements and Construction Environmental Management Plans. That includes, but is not limited to, the safeguards set out in the Roads and Maritime *Biodiversity Guidelines*.

3.3.3 Future improvements

During the life of the strategic assessment, Roads and Maritime will continue to review and if necessary update:

- Procedures for environmental impact assessment, including the undertaking of biodiversity assessments, to ensure best practice approaches to identifying the Specified Protected Matters that may be affected by an activity, potential impacts and options for avoiding, minimising or mitigating these.

3.4 Public consultation

Program commitment seven – consultation

Consistent with its corporate objectives and commitments, Roads and Maritime will ensure that appropriate opportunities are provided for community and stakeholder consultation during the environmental impact assessment process for road and traffic management activities.

Specifically, for activities that are assessed as likely to significantly impact on Specified Protected Matters this will include public notification on the Roads and Maritime web-site and an opportunity to provide comment on the project environmental assessment documentation (minimum 30 days).

If a Roads and Maritime activity is already subject to the preparation of a species impact statement (SIS), then public notification of the project environmental assessment documentation will occur at the same time as the SIS (minimum 30 days).

Community and stakeholder input to Roads and Maritime activities will be considered and taken into account during the decision-making process on the scope of any refinements to the project or whether a project should proceed.

In addition, information regarding activities that have been determined to proceed following completion of relevant environmental assessment requirements will be made publicly available by Roads and Maritime.

Roads and Maritime seek to ensure that appropriate opportunities for community input are provided during all phases of the infrastructure life cycle. Roads and Maritime recognises the value of public views to ensure projects are meeting local and regional needs and taking account of environmental values of importance to the community. This section describes how this occurs in practice.

3.4.1 Overview

The objects of the EP&A Act provide for increased opportunities for public involvement and participation in environmental planning and assessment. The EPBC Act incorporates similar objectives that seek to promote co-operative approach to the protection and management of the environment. Consistent with its *Customer Charter*, Roads and Maritime works to ensure that appropriate opportunities for community input are provided during the planning and assessment of road and traffic management activities, and throughout construction and implementation.

Roads and Maritime guidelines for community participation seek to involve the community at three broad levels:

- **Strategic and corporate direction** - Roads and Maritime undertakes community engagement activities to inform high level and long-term strategy, including through advisory bodies, customer surveys, strategic planning and whole of community information delivery

- **Program and project development** – structured community engagement programs, that are tailored to suit the particular project and level of community interest, are undertaken during the planning and development of road infrastructure, route and area strategies and road safety programs. These programs can include public notifications, invitations to comment, strategic route assessments, preferred options and REFs
- **Project delivery and service provision** - Roads and Maritime has established systems and mechanisms to ensure the community is provided with information during the construction process, including access to project environmental assessment documents, environmental incident reporting, and general information on timing and implementation.

In seeking to consult and engage the community, Roads and Maritime applies best practice principles to ensure consultation is meaningful, applies at the earliest feasible formative stage, provides adequate and timely information, allows sufficient time and a range of opportunities for input, and that community views are clearly taken into account in decision-making. Roads and Maritime also employs a wide range of techniques ranging from public meetings to local information stalls, letter-box drops, door-knocks, newsletters, web-based information and formal public notification and exhibition.

3.4.2 *Current implementation*

Consultation with government agencies and key stakeholders

Roads and Maritime procedures require that relevant agencies and stakeholders must be consulted during preparation of the environmental impact assessment for road and traffic management activities subject to Part 5 of the EP&A Act. Agencies and stakeholders may include local councils, Australian Government and State government departments, utility providers and affected landowners. Organisations targeted for consultation are identified in the project's community involvement plan.

With respect to issues potentially impacting on Specified Protected Matters, agencies and stakeholders to consult are determined by:

- **Legislative requirements under the EP&A Act** - where there is likely to be a significant impact on threatened species listed under NSW law and a Species Impact Statement (SIS) is required, Roads and Maritime must consult the government department(s) responsible for threatened species and obtain the SIS requirements
- **Other legislative requirements** - where another government agency may need to issue an approval/permit/licence or other form of authorisation under its own legislation
- **Legislative requirements under NSW environmental planning instruments** - for example *State Environmental Planning Policy (Infrastructure) 2007* requires mandatory consultation with agencies with respect to:
 - Development adjacent to land reserved under the *National Parks and Wildlife Act 1974* (the Office of Environment and Heritage)
 - Development adjacent to a marine park declared under the *Marine Parks Act 1997* (the Marine Parks Authority)
 - Development adjacent to an aquatic reserve declared under the *Fisheries Management Act 1994* (the Department of Primary Industries).
- **Particular interests in the issue** - based on current or past involvement or interest of agencies or stakeholders in a particular issue or project proposal.

Consultation occurs as early in the process as possible but at a time when sufficient information is known about the project so that the agency can provide an informed response.

Community consultation

As indicated in Section 2.5.2 there is no statutory requirement under the EP&A Act for community consultation for activities subject to the Program, with the exception of activities where a Species Impact Statement (SIS) is required. Where an SIS is required for an activity, it must be publicly exhibited for at least 30 days and submissions must be taken into account in determining whether to proceed with the activity.

Where no SIS is required, the decision to undertake community consultation, and the form of such consultation, is made by Roads and Maritime on a case-by-case basis. Roads and Maritime determines the approach to consultation consistent with requirements set out in the *Environment Assessment Procedure for Project Review of Environmental Factors*. That includes consideration as to whether a REF should be formally placed on public exhibition.

Where an REF is exhibited it is generally placed on display for a minimum period of 21 days. All submissions must be fully considered and addressed in a submissions report, which is also made publicly available.

3.4.3 Future improvements

Roads and Maritime will ensure that where a road or traffic management activity is identified as likely to significantly impact Specified Protected Matters, the project environmental assessment documentation (such as the REF) will be made publicly available for comment for at least 30 days. If an activity is subject to an SIS, the project environmental assessment documentation will be displayed together with the SIS.

Roads and Maritime will continue to review its approach to community consultation with respect to activities subject to assessment under Part 5 of the EP&A Act.

3.5 Decision-making

Program commitment eight – decision-making

Consistent with statutory requirements and assessment guidelines, Roads and Maritime will ensure that decision-making on whether to proceed with an activity takes into account all relevant consequences for the Specified Protected Matters, including from direct and indirect impacts.

Decision-making will be made by appropriately senior level delegates and on the basis of detailed information contained in the REF, supporting technical information and giving consideration to the outcomes from community consultation.

Roads and Maritime will make determined REFs and submissions reports publicly available.

3.5.1 Current implementation

Roads and Maritime has a statutory responsibility under Part 5 of the EP&A Act 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*’. Roads and Maritime is also required to establish whether the activity is likely to significantly affect the environment.

The decision-making process includes a number of tasks, as outlined in the Roads and Maritime *Environment Assessment Procedure for Project Review of Environmental Factors*. Responsibility for decision making rests with the relevant delegated manager (as per the Roads and Maritime *Delegations Manual*) and is made in response to a recommendation provided by a senior environmental officer, with input from relevant environment specialists.

The decision-making process provides for a level of independence and transparency, ensuring that scrutiny of environmental impacts is undertaken by suitably qualified and experience staff separate from the project development team. A determination of an REF demonstrates consideration of the environmental impacts to the fullest extent possible and that the activity is not considered likely to significantly affect the environment.

Some Roads and Maritime activities may be assessed as likely to have a significant impact on threatened species, populations and ecological communities listed under the NSW *Threatened Species Conservation Act 1995 (TSC Act)* or the *Fisheries Management Act 1994 (FM Act)*. Where this occurs, a separate species impact statement (SIS) is undertaken and accompanies the REF.

Roads and Maritime is still responsible for determining the REF, but may only undertake the activity after obtaining separate approval (referred to as 'concurrence') from the relevant regulatory authorities (either the Office of Environment and Heritage or NSW Fisheries).

3.5.2 *Future improvements*

Roads and Maritime will continue to review its processes with respect to final decision-making for activities subject to assessment under Part 5 of the EP&A Act. In particular, Roads and Maritime will ensure that where a road or traffic management activity is identified through the REF process as likely to significantly impact Specified Protected Matters, that measures are applied to ensure such impacts will not be unacceptable or unsustainable. That will include consideration of:

- Whether there is a real chance or possibility that the activity threatens long-term survival of specific protected matters, such that extinction may occur
- Consistency with relevant threat abatement plans and recovery plans, wildlife conservation plans, bioregional plans and related threatened species initiatives
- Whether suitable offsets can be secured, including additional or supplementary actions that may be required
- Conservation advices and any relevant guidelines provided by the Australian Government Department of the Environment.

3.6 Implementation phase

This section discusses the policies, guidelines and procedures that integrate Roads and Maritime environmental management requirements in the procurement, delivery and operations and maintenance phases of its activities.

3.6.1 Procurement (pre-construction)

Program commitment nine – environmental performance

Roads and Maritime will support the adoption and application of best practice environmental management standards by specifying environmental performance outcomes in contractual arrangements for the delivery of road and traffic management activities. That will include requirements for detailed environmental management plans, compliance with statutory requirements, and implementation of safeguards and mitigation actions identified during the environmental impact assessment process (as documented in the REF). This includes incorporation of measures for the protection of Specified Protected Matters.

Roads and Maritime will ensure that any required offsets for impacts to the Specified Protected Matters are secured in accordance with the arrangements and timeframes identified in the environmental assessment documentation for the activity.

Roads and Maritime recognises the critical importance of ensuring that the outcomes of the environmental impact assessment process, including any measures required to ‘minimise and mitigate’ impacts, are carried forward into the project implementation phase. Roads and Maritime uses its contract management system to ‘lock-in’ these requirements during the delivery of activities by construction contractors.

For routine and minor work Roads and Maritime require that construction be undertaken in accordance with an established set of standard environmental safeguards. Key safeguards for minor activities include:

- That there be no disturbance or harm to threatened species or critical habitat
- The works must not create an ongoing barrier to wildlife movement
- Any unexpected threatened species must be managed in accordance with procedure set out in the Roads and Maritime *Biodiversity Guidelines*
- Pathogen and weed risks must also be managed by application of the *Biodiversity Guidelines*.

The undertaking of these types of smaller scale activities are subject to a Construction Environment Management Plan that meets standards set by Roads and Maritime.

For major activities, Roads and Maritime requires application of a range of quality assurance specifications and technical guides that set minimum environmental standards for project delivery. These are included as compulsory provisions into project contracts. Contractors may also be required to demonstrate they have environmental management systems in place that meet relevant Australian or international standards, consistent with NSW Government guidelines.

3.6.2 Delivery phase (construction)

Program commitment 10 – inspections and auditing

Roads and Maritime will continue to implement a risk-based system of activity inspections and project audits to ensure compliance with construction contract specifications, construction environmental management plans, statutory requirements, and implementation of safeguards and mitigation actions identified during the environmental impact assessment process. This will ensure any measures relevant to avoiding unacceptable impacts to Specified Protected Matters are delivered.

Program commitment 11 – monitoring

Roads and Maritime will determine the need for environmental monitoring, including but not limited to Specified Protected Matters, during the environmental impact assessment of road and traffic management activities, taking into account advice from appropriately qualified and experienced ecologists.

Where a need is identified, Roads and Maritime will develop and undertake appropriate targeted monitoring that is directly relevant to the activity, either during the construction and/or operational phases. To ensure the effectiveness of monitoring, Roads and Maritime may also pool resources for a range of projects into a larger monitoring program that will provide meaningful and useful information to improve overall environmental management.

Program commitment 12 – incident management

Roads and Maritime will continue to implement a system for incident reporting and management. Incidents that potentially impact high biodiversity conservation values, including the Specified Protected Matters, are located within the most serious category and subject to comprehensive reporting and management requirements.

Roads and Maritime will also comply with all applicable statutory requirements for incident notification, and will work with relevant authorities to firstly ensure risks to Specified Protected Matters are minimised, and secondly to ensure any inadvertent unauthorised impacts are addressed as soon as practicable.

Inspection and reporting

Roads and Maritime conducts regular site environmental inspections of construction and maintenance projects to:

- Manage emergent environmental risks during the project lifecycle
- Evaluate the level of on-site environmental performance management of the contractor, with respect to their environmental obligations under the contract and environmental legislation
- Build a knowledge-base to avoid and reduce environmental risk on future projects through review and continual improvement of environmental performance.

Roads and Maritime have developed an Environmental Performance System (EPS), to enter surveillance data and initiate required actions. Application of the EPS and inspection requirements is set out in the Roads and Maritime *Guidance Note: Environmental Inspection Report*. The EPS also increases the efficiency of communication between Roads and Maritime and its contractors to ensure that environmental issues arising during project implementation can be tracked and responded to in a timely manner.

Incident management

Roads and Maritime has also developed and applies a procedure for dealing with environmental incidents, including unforeseen events, which may occur during the course of road activities. This system ensures Roads and Maritime is able to comply with statutory obligations to report certain incidents and is set out in the *Environmental Incident Classification and Reporting Procedure*.

In accordance with the Procedure, unauthorised harm to threatened species, populations, communities or critical habitat is considered to fall within the most serious incident category. This reflects the fact that breaches of environmental legislation may have occurred and require immediate response. Initial steps in the procedures require that works stop in

relevant locations and steps are taken to prevent further adverse impacts occurring, until such time as detailed investigations and any further actions can be considered.

Monitoring of activities

In addition to ongoing standard inspection and auditing arrangements during construction, Roads and Maritime activities are regularly subject to specific and targeted monitoring actions. Monitoring is undertaken when there is a particular issue of environmental or community significance that warrants detailed on-going review and assessment during the life of the activity. For example, the effectiveness of noise attenuation measures proximate to road-works based on assessed changes in traffic volumes and mix as a result of a project. Monitoring may also occasionally continue during the operational phase of a project, such as the use of wildlife crossing facilities.

Not all Roads and Maritime activities will warrant or require a monitoring program(s). The need for monitoring will be identified during the environmental impact assessment of the activity. If monitoring is required, the particular aims, methods and practical application of the monitoring program will be developed using appropriate ecological expertise. Importantly, an objective of monitoring undertaken by Roads and Maritime will be to ensure that the results of monitoring are used to inform and improve environmental management for the activity, consistent with the principle of adaptive management (refer Section 3.7).

3.6.3 Ongoing operation and maintenance

Roads and Maritime delivers a range of road and bridge construction and maintenance services, and traffic facilities services which are considered 'routine and minor works'. These are usually undertaken to ensure safe and efficient operation of the existing road network, rather than development of new road and traffic management facilities.

Roads and Maritime have developed a specific Environmental Management System (EMS) for these types activities and operations. The EMS includes a number of environmental procedures to support these activities, including development of soil and water management plans and installation of erosion and sediment control structures. Contractors engaged to undertake these types of works must either follow the Roads and Maritime EMS or demonstrate that they apply a system consistent with this.

3.7 Addressing uncertainty and adaptive management

Program commitment 13 – adaptive management

Roads and Maritime will support implementation of adaptive management measures that facilitate continuous improvement in undertaking road and traffic management activities, through pragmatic and practical steps building on the inspection, audit and monitoring regime applicable to particular projects.

Program commitment 14 – education and training

Roads and Maritime will invest appropriate resources to ensure staff and contractors are suitably trained and skilled for the purposes of undertaking tasks relevant to protection of the environment. That includes work actions that support the avoidance of unacceptable risks to Specified Protected Matters, such as practical application of the 'avoid, minimise, mitigate, offset hierarchy' to project delivery, environmental impact assessment, environmental and management and project inspection, auditing, monitoring and incident reporting.

Adaptive management is a process for continually improving environment management policies and practices through using the lessons and experiences gained from operational programs. It provides an iterative and practical way of addressing uncertainties that may arise during project implementation.

When properly implemented, adaptive management represents a pragmatic approach for dealing with scientific uncertainty - consistent with the precautionary principle.

Roads and Maritime is committed to implementing the commitments set out in the Program based on the concept of adaptive management. Where there is uncertainty, the Program provides scope to apply adaptive management strategies to ensure environmental impacts and risks are acceptable, comprehensively monitored and where required, reduced to as low as reasonable and feasible.

Adaptive management strategies will be applied in appropriate circumstances where available information suggests high risk of adverse environmental consequences, and where the potential for reversibility of impacts is low. In these circumstances, information from a range of sources will be applied to support continual environmental improvement.

Key mechanisms applied by Roads and Maritime include:

- **Options analysis and design refinements** – during the project development and assessment phases, Roads and Maritime continually feeds emerging environmental information into the process, which are typically detailed in Construction Environment Management Plans. This ensures options are tested and evaluated on a range of environmental costs and benefits, and enables road design to take practical steps to avoid and minimise likely impacts. This iterative process means that refinements continually occur from the inception right through to delivery stages of a project, consistent with an adaptive management approach
- **Project inspections and audits** – all construction projects are subject to fit-for-purpose inspection and audit processes. These enable the on-ground delivery of projects to be reviewed in ‘real-time’ and any deficiencies managed through a corrective action reporting mechanism. For example, unsatisfactory installation or maintenance of fauna exclusion fencing would be noted and either repaired, reinstated or altered as necessary to address the required safeguards and standards set out in the environmental management documentation
- **Targeted monitoring** – targeted monitoring of particular environmental matters may also occur during the implementation and on-going operation of road and traffic management activities. Monitoring programs are established with clear objectives and response measures, so that the results of monitoring can (if necessary) be applied to inform adaptation of specific elements of the project. For example, if the results indicated that ponds provided to support frog breeding were not achieving intended outcomes, then contingency measures may be applied to re-design or modify the ponds or that other safeguards could be applied.
- **Project completion reviews** - these are undertaken for targeted road projects as a means to capture and document the experiences and ‘lessons learnt’ during implementation, particularly where more complex issues or matters of community interest have arisen. The outcomes of the review are then fed into the initiation phase in planning for future similar projects.

In support of practical application of adaptive management, Roads and Maritime also works closely with key government agencies, such as the Office of Environment and Heritage (OEH) and Department of Primary Industries (DPI) – Fisheries, and industry partners to develop appropriate, project-specific, monitoring programs.

This collaborative approach is intended to ensure that monitoring is directly relevant to a project and provides meaningful data to inform decision-making on whether safeguards or mitigation measures require adjustment or updating. In addition, Roads and Maritime uses the broad experiences gained from project monitoring and inspection to inform and update guidelines and procedures with the Program.

3.8 Case Studies

The following case studies provide hypothetical examples developed to illustrate how application of the Roads and Maritime Program will avoid unacceptable impacts to nationally listed threatened species, communities and migratory species. While the examples focus on biodiversity related issues, in practice Roads and Maritime undertakes detailed assessment of all environmental impacts arising from an activity, including water, soil, hydrology, noise, air quality, Aboriginal and historic heritage, land use, waste, landscape and socio-economic matters.

Case Study 1 - listed threatened species and ecological community: new overtaking lanes along an existing road

Scenario

Roads and Maritime propose to construct a series of new overtaking lanes at staggered intervals along a 10 kilometre stretch of existing road. The existing road provides important connections for both community and road freight users, but has been identified as operating at less than the optimal standard for the type of road, including higher than average crash rates.

The road was constructed several decades ago and does not meet contemporary design standards. It traverses a challenging landscape, including steep climbs, ridge tops and valleys. It adjoins areas of remnant vegetation varying from low to high quality, and a range of land uses including rural residential, agricultural and tourism development. Existing public utility infrastructure, such as electricity transmission lines, is present either within or immediately adjacent to the road reserve.

The area is known to contain nationally listed threatened communities and there is high potential for threatened fauna and flora to also be present. That includes fauna whose movements may be adversely affected by road corridors, such as risks from direct mortality. Potential impacts of the activity include direct clearing of vegetation and habitat, loss of connectivity, weed and pests, changed drainage patterns, and risks associated with wider road crossings.

1. Avoid and minimise impacts – project inception

Roads and Maritime undertakes initial feasibility and risk assessments, guided by project management systems that give effect to an infrastructure lifecycle approach. This step occurs before any detailed road design work is significantly progressed. A preliminary environmental investigation is completed to identify existing environmental constraints and risks, and to inform development of design and location options for the new overtaking lanes.

In addition to environmental information, this project inception stage is also informed by investigations of traffic performance (including crash and safety analyses), constructability (technical and safety requirements for the project), and strategic road network plans (such as long-term freight management initiatives). Community engagement also commences in accordance with a published consultation plan, which describes how the community will have an opportunity to provide input, how consultation will occur, timeframes and how decisions will be made.

Prior to developing a preferred option for detailed investigation, an options report is made available for community comment. That includes opportunities for key agencies and local councils to examine the proposal and provide early feedback prior to the environmental impact assessment stage.

Based on the consideration of project options, a preferred option is proposed that seeks to have the minimum possible environment impact while at the same time delivering the road performance and safety objectives required. The preferred options report is publicly released and provides clear analysis and justification for the chosen option, including consideration of impacts and benefits.

2. Determine the likelihood of significant impacts

Following identification of the preferred option for the activity (being the identification of locations for the proposed overtaking lanes), preparation of the Review of Environmental Factors (REF) commences. The REF examines all potential environmental impacts of the activity.

The REF is underpinned by specialist investigations that provide detailed consideration of the full range of environmental issues relevant to a particular activity. For biodiversity matters, the investigations are prepared by experienced ecologists with direct knowledge and understanding applicable to the species and communities involved.

The investigations commence with:

- Background research on the presence of likely occurrence of NSW and nationally listed threatened species, communities, important migratory species habitat and critical habitat. Data is obtained from a range of sources including:
 - Current and preliminary listings under the TSC Act, FM Act and EPBC Act
 - Searches of on-line databases, including BioNet and the Protected Matters Search Tool
 - Published documents, including regional conservation plans, habitat and vegetation mapping, and local environmental plans
 - Interest groups, experts and local landholders.
- Targeted field survey focusing on biodiversity features identified as likely or potentially present in the area of the activity, based on the background research. Field survey is undertaken in accordance with published methods and guidelines, including species specific requirements.

3. Avoid or minimise impacts – design revisions and detailed assessment

a) Design

Outcomes from the detailed biodiversity investigations feed back into further refinement of the proposed activity, including design revisions. This iterative step provides a key opportunity to further limit the potential impact footprint, prior to completion of the REF.

At this point, project designers take account of information arising from the initial specialist assessments to alter and modify the overtaking lane designs and their location as far as practicable. That includes revising the start and end points and distance of overtaking lanes to minimise the extent of impact to threatened communities, refining the design of embankments and batters, and altering culvert designs to accommodate fauna crossing opportunities.

b) Assessment

The biodiversity impacts of the revised final design are assessed by experienced ecologists, taking into account the direct, indirect and cumulative consequences.

The biodiversity assessment, which informs the REF, considers impacts to both terrestrial and aquatic matters associated with: the loss of vegetation and habitat; connectivity and fragmentation; injury and mortality; weed, pests and pathogens; changed hydrology (including for groundwater dependent ecosystems); and key threatening processes. The biodiversity assessment considers all relevant recovery plans, threat abatement plans and published conservation guidance.

Assessments of significance for each threatened species or community are undertaken. For NSW listed species, the assessments address the requirements of Section 5A of the EP&A Act and published guidelines. For federally listed species, the assessments of significance follow the *Matters of National Environmental Significance – Assessment of significance guidelines*.

In preparing the significance assessments, measures that mitigate, improve or compensate for the activity are not considered in determining the degree of the effect on threatened species, populations or ecological communities, unless the measure has been used successfully for that species in a similar situation.

The biodiversity assessment includes a final conclusion on the likelihood of the activity having a significant impact on threatened species or communities.

4. Mitigate or offset residual significant impacts

Based on consideration of the specialist biodiversity assessment report, the REF identifies environmental safeguards and mitigation measures to be applied to further reduce the impacts of the activity. That includes measures outlined in the Roads and Maritime Biodiversity Guidelines, and any additional site-specific approaches. This includes the use of exclusion fencing to limit the risks

of inadvertent vegetation clearance during construction, weed management after project completion, and installation of nest boxes to mitigate the loss of hollow bearing trees. Given mortality risks associated with fauna attempting to cross the road, other options such as signage, targeted fencing and combined culvert and fauna crossing points are also identified.

The REF concludes that even after application of steps to avoid, minimise and mitigate impacts, there may still be a significant residual impact on the threatened ecological community. The REF commits to implementing an offset strategy, which will protect and secure land containing vegetation of an equivalent or better quality and conservation status. The required offset will be calculated using published scientific methods.

5. Community consultation

The REF is publicly exhibited for a period of thirty days and made available on the Roads and Maritime website. Advertisements are placed in local newspapers and key stakeholders including neighbours, community groups, Aboriginal organisations, councils and government agencies are invited to comment.

Community feedback is analysed and assessed in a submissions report. Further revisions and refinements are made to the activity in light of submissions received as appropriate.

6. Decision-making

The relevant senior Roads and Maritime delegated officer considers the REF, specialist supporting reports and public submissions prior to determining whether the activity should proceed. Experienced Roads and Maritime environment staff also provide independent advice to assist the delegated decision-maker.

If the decision-maker forms the view that an unacceptable impact to the nationally listed species or community may occur, the activity will not be determined to proceed in its current form. Roads and Maritime will take steps to further revise the activity to avoid or minimise such impacts, consider additional offset options, and/or consult with the Federal Department of the Environment.

If satisfied that it should proceed, the delegate may also require additional safeguards to be implemented either prior to or during implementation of the activity.

The determined REF and supporting information is made publicly available. Information is also provided to the community on the next steps for the project, including construction commencement and mechanisms for feedback during the implementation phase.

7. Implementation – monitoring and compliance

Environmental requirements for the activity, as specified in the REF and determination, are embedded in contract documentation. Contractors are responsible for preparation of detailed Construction Environment Management Plans (CEMP), including flora and fauna sub-plans, which give practical effect to the determination. Roads and Maritime work closely with contractors through this process, including approval of the CEMP following confirmation that it addresses requirements arising from the REF and the project contract.

Prior to construction commencing, the site is jointly inspected by experienced ecologists and contractors to confirm exclusion zones and on-the-ground management measures. During this process, further minor alterations are agreed that will enable retention of some mature trees that were originally proposed to be cleared.

Monitoring and inspections are undertaken by Roads and Maritime during the construction stage, and into completion, to ensure compliance with the required environmental safeguards. Any non-compliance is recorded and remedial actions instigated.

During this stage, Roads and Maritime also finalises and implements the required offsets strategy. In this instance, a private landowner with a property in the local area containing the same type of threatened community impacted by the project, agrees to establish a BioBanking agreement under the TSC Act and Roads and Maritime agrees to purchase and retire biodiversity credits sufficient to meet the required offset. Once finalised the details of the offset are made publicly available by Roads and Maritime.

During project implementation and prior to opening of the overtaking lanes for public use, landscape treatments using flora species of local provenance are applied. Following completion and opening of the overtaking lanes, a weed management plan is implemented for twelve months. The plan tracks the success of the landscape plantings and takes actions to minimise the risk of weed spread.

Case Study 2 - listed threatened species and migratory species: new bridge over a floodplain area

Scenario

Roads and Maritime propose to demolish and replace an existing timber bridge. The condition of the current bridge is no longer capable of accommodating current road and traffic requirements, including large freight vehicles, and its removal is consistent with Roads and Maritime's published *Timber Truss Bridge Conservation Strategy*.

Construction of a new bridge provides an opportunity to improve connections between two regional communities and divert heavy vehicle traffic away from existing residential areas. The design for the new bridge is also proposed to span a floodplain, which will improve accessibility (the existing bridge is sometimes closed to traffic due to flooding) and allow bank stabilisation works within the creek that will address existing erosion issues.

The existing bridge may provide potential habitat for a species of bat listed under both NSW and Federal legislation, and which is known to frequent culverts and caves in nearby sandstone ridges. In addition, a floodplain wetland occurs in proximity to the proposed project. While the activity will not directly impact the wetland, it and surrounding areas may provide potential habitat for nationally listed migratory bird species.

Potential impacts of the activity include removal of habitat (including the existing bridge), clearing of vegetation, changed hydrology, disturbance associated with noise, vibrations and light, and introduction of weeds and pathogens.

1. Avoid and minimise impacts – project inception

Consistent with the infrastructure lifecycle approach, and before commencing detailed assessments, Roads and Maritime undertakes a route selection study to investigate a range of potential locations for the new bridge. These are assessed according to evaluation criteria covering technical, environment, social and economic constraints. That includes existing available information on the biodiversity values of the area, including accessing data sources regarding NSW and Federally listed threatened species and communities, vegetation mapping, and species profiles.

The route selection study is released for public comment to enable community views to be taken into account before a preferred option is determined and full environmental assessment is commenced. Community information sessions and workshops are held to discuss the alternatives. A technical workshop is also held to examine the construction feasibility of different options, involving bridge and road design expertise from within Roads and Maritime, the local council and contractors.

Following feedback from the community and local council, and taking account of the technical assessments, a preferred option is identified that seeks to avoid the wetland area, minimise the extent of good quality vegetation to be impacted and that delivers improved access and amenity for communities on either side of the river. The preferred option report is also publicly released, outlining the rationale for the proposed new bridge location, next steps in environmental assessment and ongoing opportunities for public comment.

2. Determine the likelihood of significant impacts

Following identification of the preferred bridge option, preparation of the Review of Environmental Factors (REF) commences. The REF examines all potential environmental impacts of the activity, including likely social and economic consequences, and documents how consideration of alternative options was taken into account.

Experienced ecologists are engaged to undertake an assessment of the biodiversity impacts of the proposal, building on the initial desktop analysis from the route selection study. Targeted field surveys are completed, including assessment of the existing bridge for bat species and the floodplain area for migratory bird species. Surveys are undertaken in accordance with published methods for the particular target species. The ecologists also contact local bird-watching groups to obtain further information.

The surveys indicate that while bat species do not appear to be currently using the bridge, it may have been utilised in the past and there is confirmed habitat in the vicinity (sandstone caves). Similarly, while there are no confirmed records of migratory bird species in the area, the floodplain is considered to contain habitat features that may support such species.

3. Avoid or minimise impacts – design revisions and detailed assessment

a) Design

The biodiversity field survey conclusions are used to revise and fine-tune the bridge footprint and design alignment further, before the REF is finalised for exhibition. The project designers and development team consider opportunities to stage the works so that the existing bridge remains in place for a period of time after the new bridge has been completed, to enable potential use by bats during seasons when they are known to be breeding. Even though there is no firm evidence of existing use, the design of the new bridge also seeks to incorporate opportunities for bat habitat, by providing unsealed crevices and installation of nest boxes designed specifically for bats.

In addition, design of the bridge approaches is revised to ensure an appropriate set-back from areas that may support migratory bird habitat, including the relocation of planned construction sites to other existing cleared areas elsewhere. Water quality measures are also reconsidered to ensure that their location, capacity and treatment techniques are adequate. Plans are developed to provide for the design of permanent sediment basins to incorporate local provenance plant species, including seed collection and propagation in advance of construction commencing.

b) Assessment

The biodiversity impacts of the revised final design are assessed by experienced ecologists, taking into account the direct, indirect and cumulative consequences. The assessment specifically examines potential impacts to relevant specified protected matters, in this case the nationally listed bat species and migratory species. The assessment considers direct and indirect habitat loss (including the existing bridge), changed hydrology and water quality outcomes, disturbance to roosting, breeding and foraging patterns, and possible weed incursion. All relevant recovery plans, threat abatement plans and published conservation guidance is considered.

Assessments of significance are completed for NSW listed species to address the requirements of s.5A of the EP&A Act and published guidelines. For Commonwealth listed species, the assessments of significance follow the *Matters of National Environmental Significance – Assessment of significance guidelines*. For bat species, the published recovery plan is considered. For migratory species, reference is made to the published *Wildlife Conservation Plan for Migratory Shorebirds and the EPBC Act Policy Statement 3.21 – Significant Impact Guidelines for 36 migratory shorebird species*. The assessment concludes that the affected area does not comprise “important habitat” for migratory species.

The biodiversity assessment includes a final conclusion on the likelihood of the activity having a significant impact on threatened species or communities.

4. Mitigate or offset residual significant impacts

Although it is not considered likely that there will be a significant impact on either nationally listed bat or migratory bird species, the REF identifies a range of appropriate environmental safeguards that will further reduce risks and support conservation objectives. That includes actions detailed in the Roads and Maritime Biodiversity Guidelines, including exclusion fencing in proximity of potential migratory species habitat, pre-construction checks by ecologists, a procedure for dealing with unexpected fauna finds, monitoring of water quality and sediment basin functioning, and weed control for revegetated areas. In addition, the REF commits to a staged removal process for the existing bridge, a new bridge design providing in-built features for bats, and installation and monitoring of purpose built bat boxes.

No offsets are proposed as there are no residual significant impacts associated with the activity.

5. Community consultation

As there is no significant impact expected on specified protected matters, the REF does not have to be publicly exhibited to meet commitments set out in the Program.

However, applying its standard guidelines for community consultation Roads and Maritime determines that the project is of sufficient scale, complexity and public interest to warrant exhibition. The REF is therefore made available for comment on the Roads and Maritime website and key stakeholders notified through local newspapers and direct invitations to comment.

Community feedback is analysed and assessed in a submissions report. Further revisions and refinements are made to the activity in light of submissions received as appropriate. That includes a commitment to provide resources to support targeted surveys by the local bird-watching group to

improve information regarding use of the nearby wetland area by migratory birds, and installation of interpretive signage in council reserves bordering the wetland.

6. Decision-making

The REF, together with the biodiversity assessment, other technical reports and the review of public submissions, is submitted to the relevant senior Roads and Maritime delegated officer for determination. Advice is also provided by Roads and Maritime environment staff to assist in ensuring transparency and rigour in the decision-making process.

The decision-maker concurs with the conclusion that the activity will not have a significant impact on nationally listed species, and will not be unacceptable. The proposed environmental safeguards and mitigation measures are considered appropriate given the potential habitat values of the locality for the bat and migratory species. No additional measures are required by the delegate and it is determined that the activity may proceed.

The determined REF and supporting information is made publicly available. Community updates are provided regarding arrangements for project implementation, particularly timeframes for the staged removal of the existing bridge and implications for traffic management on both sides of the river.

7. Implementation – monitoring and compliance

Contract documentation is finalised to enable works to commence. The contracts stipulate the delivery of the required environmental safeguards identified for this particular activity, together with the standard obligations that apply to all projects. A Construction Environment Management Plan (CEMP) is prepared and requires approval of Roads and Maritime before construction may proceed.

Consistent with the measures identified in the determined REF, exclusion fencing is installed and the site is inspected by experienced ecologists before construction. Ecologists also advise on the construction and installation of bat boxes on the new bridge, monitor the old bridge for potential bat use, and work with the local bird-watching group to design a suitable bird survey program for the wetland area.

Monitoring and inspections are undertaken by Roads and Maritime during the construction stage, and into completion. Inspections indicate that one detention basin does not comply with the required design standards. Roads and Maritime requires the contractor to take remedial action to ensure the basin conforms to specifications, and implementation of a water quality monitoring program for a twelve month period.

Following completion and opening of the new bridge, a weed management plan is also implemented for twelve months. The plan specifically targets the revegetated sediment basins. Outcomes of the community bird survey are collated and released on the Roads and Maritime website.

3.9 Summary of environmental assessment policies, processes and procedural guidelines

As discussed above, Roads and Maritime has developed and applies a range of guidance documents to inform and assist staff in practical implementation of the Program.

Table 3-1 (below) summarises how the key published and internal guidance documents will support Roads and Maritime in meeting the Program's commitments to Specified Protected Matters when undertaking road and traffic activities that are subject to environmental assessment under Part 5 of the EP&A Act.

It should be recognised that these documents are not static; they remain under review and are updated at regular intervals to ensure they reflect best practice. They are also supported by a suite of internal procedures, templates and systems that support informed decision-making on activities.

Roads and Maritime has identified above a number of procedures that will be reviewed and revised if necessary, before the final Program is submitted for endorsement.

Table 3-1: Key Roads and Maritime procedural guidelines and practice notes

Guidance document	Description of content
Published materials	
<i>Environment Policy Statement</i>	Sets out Roads and Maritime’s high level environmental commitments, which apply to all functions of the agency. That includes a commitment to manage road and traffic management activities consistent with ESD principles and pursue continuous improvement in environmental performance.
<i>Customer Charter</i>	Sets out Roads and Maritime’s commitment to seek involvement, take account of views, and keep the community informed.
<i>Environment Assessment Procedure for Project Review of Environmental Factors</i>	<p>Provides detailed guidance for the undertaking of environmental impact assessments for Roads and Maritime activities subject to Part of the EP&A Act. That includes requirements for assessing impacts on all aspects of biodiversity, including the Specified Protected Matters, and applying environmental safeguards and mitigation measures. It also includes guidance on undertaking community consultation on proposed activities.</p> <p>The Procedure will be reviewed prior to submission of the final Program for endorsement. This will ensure that best practice approaches to assessing the impacts on the Specified Protected Matters are applied.</p>
<i>Environmental Impact Assessment Practice Note – Ecologically Sustainable Development</i>	Provides information on the consideration of ESD principles during a project lifecycle, including during the environmental impact assessment process.
<i>Biodiversity Guidelines</i>	Provides guidance on a comprehensive range of measures to be applied during the pre-construction and construction stages of an activity, to minimise impacts and risks to biodiversity.
<i>Environmental Inspection Guidance Note</i>	<p>Outlines the purpose of the environmental inspection process and provides guidance on:</p> <ul style="list-style-type: none"> • Assessment and communication of any issues observed • Determination of the priority risk of individual site issues • Selection of the ‘traffic light’ overall performance status of the site.
<i>Environmental Incident Classification and Reporting Procedure</i>	Sets out requirements for classifying and reporting of environmental incidents to ensure compliance with statutory obligations, including specific reporting responsibilities and actions to be taken.
Internal support materials	
<i>Project Management System for more substantial projects</i>	Provides guidance and project management requirements for development managers, including internal decision-making “gateways”, business case processes, and environmental obligations. Roads and Maritime’s project management system for major projects is certified to the international quality management standard ISO-9001
<i>Guideline for Biodiversity Offsets</i>	In determining the type and nature of suitable offsets for a particular project, Roads and Maritime applies relevant NSW Government policies and has a roads activity specific guideline (<i>Guideline for Biodiversity Offsets</i>).
<i>EIA Practice Note – Biodiversity Assessment</i>	Specifies the best practice requirements for undertaking biodiversity assessments to inform preparation of the REF, including use of accepted data sources, methods, assessing the significance of impacts, and application of environmental safeguards.

Guidance document	Description of content
<i>Quality assurance contract specifications</i>	Detailed requirements that must be met by contractors during the undertaking of the road activity, dealing with the full range of environment protection matters including biodiversity, heritage, water, soil, noise, lighting, etc. This includes contractual obligations regarding preparation of Construction Environment Management Plans.

4 Assessing Program impacts on Specified Protected Matters

4.1 Overview

The previous chapters of this Strategic Assessment Report have provided an overview of the Roads and Maritime Program, and information on how the various elements of the Program seek to minimise potential impacts to Specified Protected Matters. That includes through the application of the 'avoid, minimise, mitigate, offset' hierarchy when planning for, assessing and delivering road and traffic management activities subject to Part 5 of the EP&A Act.

This Chapter considers the impacts of the implementing the Program on Specified Protected Matters, using a risk-based assessment method that takes pragmatic account of the real prospects for impacts to occur as a result of Roads and Maritime activities.

As discussed in Chapter 2, there is a wide scope of potential Roads and Maritime activities that are assessed under Part 5 of the EP&A Act. Equally there is a large number of nationally listed threatened species, communities and migratory species occurring in NSW that comprise the Specified Protected Matters, and which at some time may be affected by Roads and Maritime activities.

In order to manage the assessment process in a meaningful way, such that impacts arising from the Program can be rationally considered, a key component of the approach taken in the strategic assessment is to categorise both Roads and Maritime's activities and Specified Protected Matters into logical and prioritised groupings.

In effect, that means that rather than considering the potential impacts on each species or community individually, the assessment examines the risks and consequences of the Program for broad, similar groupings. It also means that Specified Protected Matters unlikely to be impacted by the Program are considered but are not subject to a detailed risk assessment.

The following sections outline the types of activities undertaken by Roads and Maritime, the impacts and hazards that may arise, and the approach to grouping both the activities and hazards for the purposes of undertaking this part of the strategic assessment. The method for grouping of nationally listed threatened species, communities and migratory species is also detailed.

This is followed in Section 4.6 by a risk assessment that then uses the groupings of activities and hazards as the basis for examining the impacts of the Program on Specific Protected Matters.

4.2 Roads and Maritime activities

This section provides a description of the type and scope of activities that are undertaken by Roads and Maritime following assessment under Part 5 of the EP&A Act, and which are subject to the processes and commitments set out in the Program. The intention is not to describe all potential Roads and Maritime activities, but to provide a general outline of typical examples.

Roads and Maritime are responsible for managing the operations of roads and waterways, designing and delivering initiatives, programs and projects that align to its core business model of *Build, Manage Journeys, Maintain and Enable*. Its activities cover a vast spectrum of work, ranging from new road infrastructure in greenfield sites through to general maintenance activities such as line marking. Road activities proceed through a series of typical project stages including: pre-construction; construction; post-construction; operation and maintenance.

For the purposes of the strategic assessment the types of activities undertaken by Roads and Maritime have been broadly grouped as follows. The groupings are based on a combination of lifecycle stage and consideration of the potential likelihood of each activity to present a significant risk (based on the list of hazards identified in Section 4.3). A full list of activities within each group is provided in Appendix C.

4.2.1 *Grouping minor work activities*

Three categories of 'minor work' activities were identified. Given the limited scale and extent of impacts associated with work in each category, it is generally considered that these are highly unlikely to have either a significant or unacceptable impact on Specified Protected Matters. Nevertheless, they are considered as part of the detailed risk assessment discussed in Section 4.5 below.

Routine and minor work - preparatory, rehabilitation or investigative

This includes activities that are generally required to inform the undertaking of a larger project (such as geotechnical investigations), to prepare a site (such as temporary soil and erosion controls) or to assist restore environmental values at the end of a project (including landscaping and revegetation using local provenance species). Such activities usually occur in a focused, discrete location where environmental safeguards can be rigorously applied and the prospects for inadvertent impacts are very low.

Geotechnical investigations, for example, involve drilling to obtain soil samples that provide essential information on soil type, stability and any potential existing contamination. Drilling generally targets existing cleared areas with good access, seeking to avoid areas containing good quality vegetation that may not otherwise be impacted by a proposed road activity. At the conclusion of testing, drill holes are filled in and sites rehabilitated to an appropriate standard. Similarly, erosion controls such as sediment basins are targeted towards locations that will provide optimal environmental protection, limiting the risk of uncontrolled or untreated material impacting the surrounding environment.

Routine and minor work - supporting infrastructure

Supporting infrastructure includes a range of complementary activities that are essential to the safe operation and functioning of the road. Examples include: security systems (such as CCTV); pedestrian and cyclist facilities; street lighting; and routine maintenance (such as repairs to culverts and drains).

Routine and minor work - infrastructure work within current road footprint

This includes small-scale physical works within or immediately adjacent to the disturbed area of existing roads. Typical examples include: installation of safety barriers; repairs to the road surface; and maintenance of access tracks and bridges. Given these are associated with existing roads, there is limited potential to impact Specified Protected Matters.

4.2.2 *Grouping other road activities*

Five remaining categories of road activities were identified. In general, and relative to the minor activity groupings discussed above, these are considered to have higher potential to have a significant impact on Specified Protected Matters.

Ancillary facilities

These include works related to provision of roadside rest areas, which provide a key response to managing driver fatigue and promoting safety outcomes for the community. Such facilities are generally permanent in nature and need to be located at strategic and regular points across the road network.

It also includes temporary activities that are needed to support the construction process, such as establishment of work compounds, stockpile sites, temporary offices, parking and concrete batching. Depending on the size and complexity of a road activity, the footprint and potential environmental impacts of such facilities can vary significantly. In identifying suitable work sites, the first preference is to locate existing cleared and disturbed areas that have good access, are not within immediate proximity to waterways, and that support good site management practices (for example, management of material stockpiles).

Utilities and fencing

Activities that involve new sections of road, realignments or overtaking lanes will typically require the installation of new utilities, the relocation of existing utilities, or both. That can include electricity transmission lines, water and sewer pipelines, and telecommunications facilities. This occurs because many utilities follow or traverse existing road corridors.

Fencing is provided along new and existing roads for a variety of purposes. That can include noise attenuation to residential properties, security fencing and temporary safety fencing during construction. In addition, it also includes permanent fauna fencing to prevent entry of animals to the road corridor and to encourage use of installed fauna crossing infrastructure, such as fauna underpasses, land bridges and climbing poles.

Supporting infrastructure – basins, drains and culverts

Infrastructure that enables that management of water quality and quantity is essential to the operational functioning of roads. Roads must be well drained to ensure driver safety and long-term road condition.

Roads and Maritime installs and maintains a range of water related infrastructure, including water quality basins, culverts, drains and causeways. The design and location of these facilities is essential to both deliver road objectives and protect the environment. Managing the flow of water (for erosion and flooding purposes) and quality (to protect aquatic habitat values) is considered essential.

Work within waterways

In addition to water management infrastructure, Roads and Maritime also undertakes work directly within or in the immediate vicinity of creeks, rivers and other waterways. That can include dredging, removal or replacement of snags, bank stabilisation works and flood protection. Bridge projects are a typical area where such works may be required.

Primary infrastructure works

This group of works includes a range of activities that are core to the work of Roads and Maritime, that usually involve investment of substantial capital and other resources, and are of significant community interest. It includes road carriageways, bridges, service roads, demolition, slope and embankment works, and fauna crossing structures such as overpasses and land bridges.

Many of these activities typically represent the most likely risk to biodiversity, including Specified Protected Matters, as they involve vegetation removal, earthworks, changed drainage and hydrology, disturbance associated with noise and lighting, and potential weed and pest species impacts.

4.3 Roads and Maritime activities - impacts and hazards

The above activities can give rise to a range of direct, indirect or cumulative impacts on the environment, including to Specified Protected Matters.

The Roads and Maritime Biodiversity Guidelines provide an accepted list of potential hazards to biodiversity, namely:

- Loss of native vegetation – caused by direct clearing, as well as longer term impacts such as changed drainage patterns
- Loss of habitat for native flora and fauna – such as removal of hollow-bearing trees and bushrock
- Direct mortality of native fauna – for example, during construction or as a result of fauna attempting to cross roadways
- Loss of connectivity for flora and fauna – by creating barriers to movement and dispersal of species, such as new roads, widened corridors and fencing
- Loss of foraging resources for foraging and nesting fauna – such as removal of bushrock and habitat trees
- Fragmentation of vegetation resulting in edge effects, isolation and barrier effects – which is also usually a result of vegetation clearance, where impacts extend from the immediate area of removal leading to degradation of remaining roadside vegetation, small poorly connected vegetation remnants, and limited opportunities for fauna movement
- Disturbance effects from noise, light and wind turbulence – which can impact on the use of habitat by native fauna, affecting breeding and roosting behaviour
- Water quality changes as a result of works in or adjacent to aquatic habitats and alterations to flow – including risks associated with erosion and sediment management that affect the ability of aquatic fauna and flora to utilise habitats (for example, increased turbidity)
- Invasion and spread of weeds and pest fauna species – which may arise via use of inappropriate species in landscaping and revegetation, altered conditions that favour weed species over natives, and opportunities for pest fauna species to expand their range
- Spread of pathogens – which can be dispersed from one location to another by footwear, vehicles and machinery if suitable infection control methods are not applied.

These groupings of hazards are used to undertake the assessment of impacts associated with the Program in Section 4.5 below.

4.4 Specified Protected Matters

There are 615 species and 33 threatened ecological communities listed under the EPBC Act that are known from, or predicted to occur, in NSW. The full list is provided in Appendix D.

For the purposes of the strategic assessment the 'priority' Specified Protected Matters (ie. those with potential to be impacted) have been grouped such that species and communities expected to exhibit similar responses to actions listed under the Program could be assessed together.

Those species, communities and migratory species likely to be impacted by the hazards resulting from implementing the Program were identified through a methodology that is described in Figure 4-1. Sections 4.4.1 to 4.4.4 then discuss the steps in this process and the resulting groupings.

Each of the groups is then subject to a detailed risk analysis that considers the categories of activities and hazards discussed above (refer Section 4.5).

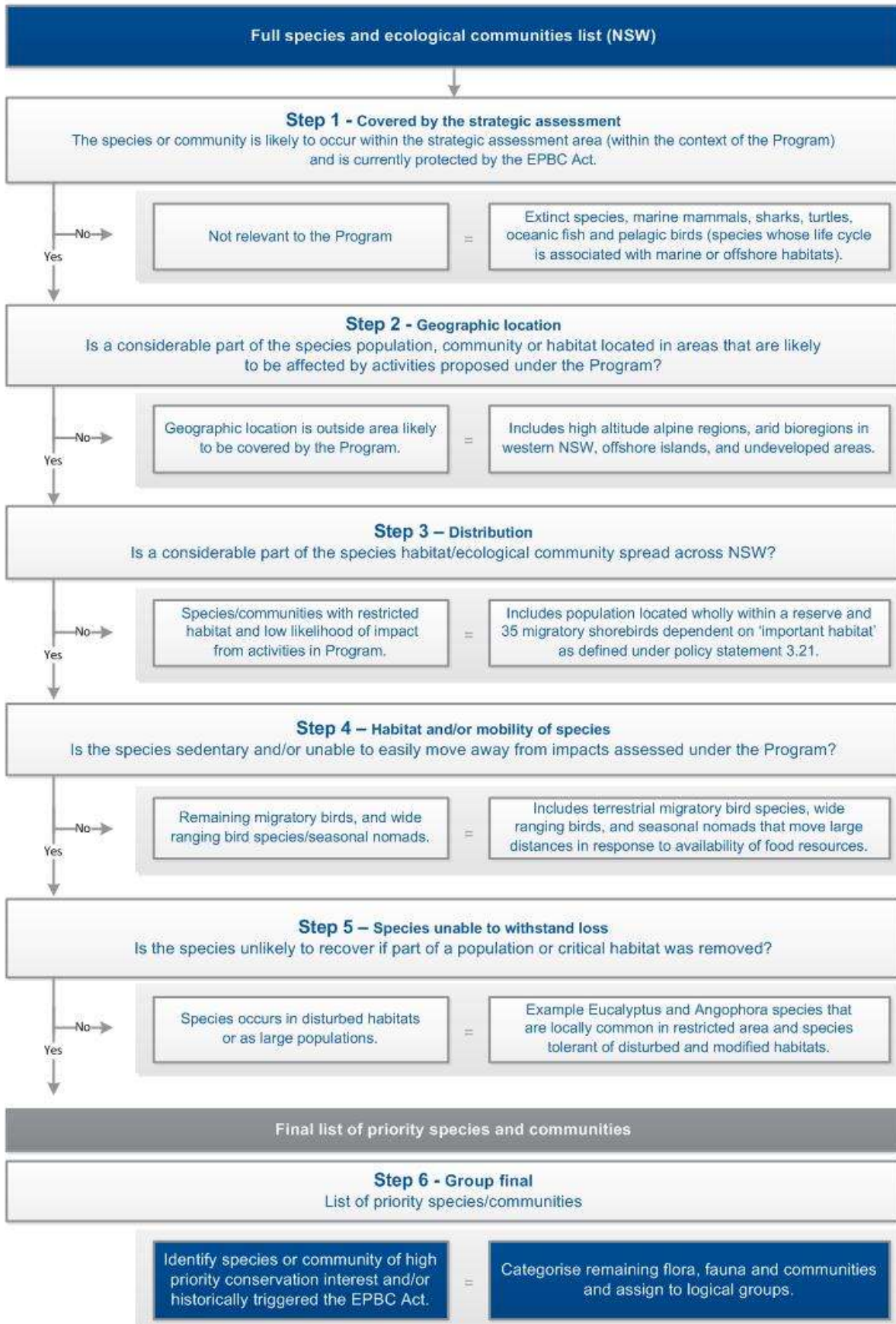


Figure 4-1: Steps used to prioritise and group Specified Protected Matters

4.4.1 *Prioritising Specified Protected Matters*

The discussion provided below is a summary of more detailed information included in a Species Grouping Methodology developed to support the Strategic Assessment process and is included as Appendix E.

Step 1 – species not affected by the Program

Species that were identified as being primarily associated with marine habitats or that were listed as 'extinct' were removed from further consideration as they are not subject to the impacts of actions in the Program. The list included marine mammals, fish, turtles, sharks and pelagic birds and 46 extinct plant species – a total of 114 species removed from further consideration.

Step 2 – geographic location

Species and communities whose distribution is in a geographic location considered outside of the focus area for the activities listed under the Program were also removed from further consideration. This list included 68 species and one community and was defined by a number of criteria including:

- Species considered outside program area (ie. species whose distribution has been confirmed as outside NSW that were identified in the Protected Matters Search Tool (PMST) for NSW due to presence of potential habitat and therefore low probability that this species may occur in adjoining borders of NSW)
- Species whose distribution has been confirmed only from islands off the coast of NSW (e.g. Lord Howe Island)
- Species and communities found only in an arid bioregion or the Australian Alpine bioregion and not expected to be subject to activities listed under the Program.

Step 3 - distribution

Identified as a species with a known distribution that is within developed and populated regions however it is restricted to discrete areas considered outside of the focus for the activities listed under the Program. This list included 158 species identified according to the following criteria:

- The distribution of the species is restricted to a single discrete locality or habitat that presents a low likelihood of interaction with the activities in the Program
- The distribution of the entire population(s) is present in a national park or other conservation reserve and therefore not subject to interaction with the activities in the Program
- 'Important habitat' for a migratory species (the likelihood that the activities in the Program would impact on 'important habitat' is low).

Step 4 - habit and/or mobility of species

Identified as a wide-ranging species, that can occupy modified habitat or a seasonal nomad that moves large distances in response to the availability of food resources and therefore is highly mobile. This includes terrestrial migratory bird species that are considered capable of moving away from potential impacts associated with the Program (16 species).

Step 5 - species 'able to withstand loss'

Species considered 'able to withstand a loss' from the population is a category used in the *Biobanking Assessment Methodology and Credit Calculator Operational Methodology* BBAM (DECC 2009).

The Threatened Species Profile Database (TSPD) accompanies the BBAM and identifies species listed in NSW as 'able to withstand a loss' in each Catchment Management Area (CMA) region. The methodology for prioritising species adopted the same approach as the BBAM and TSPD in prioritising the species remaining after application of Steps 1-4 above.

The criteria for a species that 'cannot' withstand further loss (in a specific CMA region) is considered to fit within one or more of the following:

- The species is naturally very rare, is critically endangered, or has fewer than three populations in that CMA region or a restricted distribution
- The species or its habitat needs are poorly known.

This rationale was applied to the remaining species and involved a review of the categories assigned to the TSPD to identify species confirmed as 'able to withstand a loss' (31 species).

4.4.2 Grouping Specified Protected Matters

Editor note: A new impact profile to be developed for *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion.

Central Hunter Valley Eucalypt Forest and Woodland to be incorporated into an existing impact profile and risk assessment for the profile updated..

Number of species and EECs to be updated.

After application of steps 1-5 in Section 4.4.1 above the 'long list' of 615 species and 33 threatened ecological communities was prioritised to 223 species and 31 threatened ecological communities that are directly relevant to the activities (class of actions) listed under the Program. Priority species and communities were grouped with a focus on habitat preferences and functional classifications which are predicted to exhibit a similar response to impacts as a result of activities listed under the Program. The 'long list' prioritisation and grouping method is summarised in steps 1-4 below and resulted in 39 groups.

Step one – special interest groups (eight groups)

This group included a list of eight species and one ecological community that have more frequently required assessment as part of Roads and Maritime projects or that are considered to have a special public interest or greater focus of scientific research or conservation investment, and included:

- Koala (*Phascolarctos cinereus*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Green and Golden Bell Frog (*Litoria aurea*)
- Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)
- Superb Parrot (*Polytelis swainsonii*)
- Leafless Tongue-orchid (*Cryptostylis hunteriana*)
- Seasonal nomadic birds - Regent Honeyeater (*Anthochaera phrygia*) and Swift Parrot (*Lathamus discolor*)

- White Box-Yellow Box-Blakelys Red Gum Grassy Woodland and Derived Native Grassland.

Step two – grouping plant species (16 groups)

The remaining priority flora (180 species) were grouped according their dominant habitat preference and growth form. Habitat types were identified according to the broad vegetation formations for NSW as described by Keith (2004) while grouping by growth form included trees, shrubs, groundcovers (herbs, forbs, graminoids and terrestrial orchids), and epiphytes and climbers.

The 16 groups assigned using this approach is as follows:

- Dry sclerophyll shrubs – 65 species
- Dry sclerophyll groundcovers – 29 species
- Dry sclerophyll epiphytes and climbers – 2 species
- Dry sclerophyll trees – 17 species
- Forested wetland groundcovers – 5 species
- Forested wetland shrubs – 1 species
- Grassland groundcovers – 11 species
- Heathland groundcovers – 7 species
- Heathland shrubs – 3 species
- Rainforest epiphytes and climbers– 2 species
- Rainforest shrubs – 1 species
- Rainforest trees– 26 species
- Wet sclerophyll groundcovers – 3 species
- Wet sclerophyll shrubs – 5 species
- Wet sclerophyll epiphytes and climbers – 1 species
- Forested wetland trees – 2 species

Step three – grouping animal species (eight groups)

The remaining priority fauna (35 species) were grouped firstly according to dominant habitat preference and where applicable microhabitat dependence. The 8 groups assigned using this approach is as follows:

- Wetland-dependent fauna (7 species)
- Riverine-dependent fauna (7 species)
- Stream-dependent fauna (4 species)
- Dry sclerophyll hollow-dependent fauna (1 species)
- Dry sclerophyll rock-dependent fauna (2 species)
- Dry sclerophyll groundcover-dependent fauna (6 species)
- Rainforest fauna (4 species)
- Grassland fauna (4 species).

Step four – grouping threatened ecological communities (seven groups)

The remaining threatened ecological communities (30) were categorised into seven groups according to the dominant broad vegetation formations for NSW as described by Keith (2004), as follows:

- Dry sclerophyll communities (8)
- Wetland communities (5)
- Grassland communities (3)
- Grassy Woodland communities (7)
- Rainforest communities (4)
- Wet sclerophyll communities (2)
- *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion.

4.4.3 *Expert review and input*

Following application of the species prioritisation and grouping methodology discussed above, a workshop was held with experienced biodiversity experts to obtain critical appraisal of the methods developed and applied.

Taking account of the expert opinions, a final review of the SPRAT database, relevant species recovery plans and conservation advice was then undertaken to re-confirm or revise the assignment of species and communities into their respective groups.

4.4.4 *Prioritised species and groups*

At the conclusion of the review process the final 'priority' list of Specified Protected Matters (and priority species groupings) totalled 39 groups and 254 species/communities, summarised as follows:

- Priority fauna (eight groups, 35 species)
- Priority flora (16 groups, 180 species)
- Priority vegetation communities (seven groups, 30 communities)
- 'Of interest' species and vegetation communities (eight groups, consisting of eight species and one vegetation community).

Appendix D provides the full list of Specified Protected Matters and also identifies prioritised Specified Protected Matters 'by group'.

4.5 Assessment of impacts to Specified Protected Matters

Having identified appropriate groupings of Roads and Maritime activities, likely hazards and Specified Protected Matters, the following part of the strategic assessment uses this information to undertake a risk assessment. The overall purpose is to consider the consequences of implementing the Program on Specified Protected Matters and inform a conclusion as to whether unacceptable impacts are likely.

4.5.1 *Identification of risk to Specified Protected Matters*

Assessment of risk was undertaken through the preparation of a species impact profile for each priority group of Specified Protected Matters. Each species impact profile incorporates a risk assessment. The risk assessment method is summarised below.

The objective of the risk assessment process was to identify and rank risks to the priority list of Specified Protected Matters (as identified in Section 4.3) as a result of implementing the

Program. This involved consideration of the key hazards associated with the activities under the Program, the likelihood of those hazards occurring and the consequences for each of the Specified Protected Matters.

In undertaking the risk assessment, a precautionary approach was applied. In particular, it was assumed that all priority species and communities have the potential to be unacceptably impacted by the Program if appropriate measures are not implemented. Therefore all species and communities were subject to a detailed analysis of risks, rather than being further filtered and prioritised.

Application of the risk assessment framework to the identified groups was designed to identify Specified Protected Matters at risk from implementation of the Program and to consider how such risks are managed with reference to Roads and Maritime policies, procedures and guidelines.

4.5.2 *Assessment of risk to Specified Protected Matters*

The key components of the risk assessment framework are based on defining the:

- *Likelihood* - of an impact occurring (ie. what is the expected frequency or occurrence of the hazard / activity on each of the grouped Specified Protected Matters)
- *Consequence* - to the species / communities in the event that the impact does occur (ie. what would be the severity of impacts associated with the hazard / activity on each of the grouped Specific Protected Matters)
- *Risk rating* – a qualitative score assigned by comparing the likelihood and consequence outcomes to provide an overall rating, ranging from very low to very high.

Impact profiles, that include the risk assessment matrix, are included in Appendix F.

Assigning likelihood and consequence criteria

The risk assessment followed a standard risk assessment process with respect to the application of criteria for defining 'likelihood'.

Consequence criteria were developed separately for species and for threatened ecological communities. Both sets of criteria are based on significant impact criteria defined in the *Matters of National Environmental Significance – Assessment of significance guidelines* (DoE 2013).

When considering the consequence criteria, scores were allocated for each activity/hazard based on zero (or nil consequence) to five (catastrophic consequence). With respect to threatened ecological communities, the consequence criteria included consideration of the extent of the subject community that remains relative to its pre-European extent.

Risk matrix

Assessment of risk was undertaken using a standard risk matrix. The final level of risk assigned to each activity / hazard was based on the highest level of risk assigned to that activity for the species or community. Risks identified as potentially high or very high were addressed and discussed further in the species 'assessment' section of each impact profile. The risk assessment outcomes are presented in the impact profiles included as Appendix F.

Each impact profile was based on a literature review and details information on the following:

- A review of the species biology / ecology and population status
- Details on important life-cycle attributes relevant to each plant and animal species

- Migration (where relevant)
- Species distribution and the distribution of important areas and populations.

Based on this information and the outcomes of the risk assessment framework, further assessment of expected impacts is presented in the species impact profiles which include information on:

- List of known key threats to the species
- Relevant conservation advice, recovery plans and threat abatement plans
- Summary of the anticipated ‘high’ and ‘very high’ hazards identified from the risk assessment as resulting from the implementation of activities under the Program.

4.6 Risk analysis results and discussion

4.6.1 Results of the risk analysis

The risk analysis considered the potential risks to 39 groupings of species and communities (refer Section 4.3) that may arise as a result of Roads and Maritime activities that are subject to Part 5 of the EP&A Act. The results of the risk analysis process are provided in Appendix F. Table 4-1 summarises the results of the impact assessments in terms of activities that have been assessed as having either a ‘high’ or ‘very high’ risk against the respective activity hazards.

Table 4-1: Summary of ‘high’ and ‘very high’ risk assessment results

Activity	Hazards									
	Loss of native vegetation	Loss of Habitat	Direct mortality	Loss of Connectivity	Loss of resources (for foraging / nesting fauna)	Fragmentation (edge effects, isolation, barriers)	Disturbance (light, noise, wind)	Water quality or alterations to flow regimes	Invasive species	Spread of pathogens
Minor work - preparatory, rehabilitation, investigative	1								2	1
Minor work - infrastructure work within road footprint										
Minor work - supporting infrastructure										
Ancillary facilities		3	2		4			2	1	2
Primary infrastructure work	35	39	20	25	27	31	8	13	22	11
Supporting infrastructure - basins, drains and culverts	2	4	3	5	1	3		18	7	2
Work within waterways	4	8	3	9	6	6		17	9	2
Utilities and fencing			1		1					
Total number of high or very high risks ‘by hazard’	40	52	28	38	37	38	8	45	40	18

As can be seen from Table 4-1 and Figure 4-2, Specified Protected Matters are consistently at highest risk as a result of 'primary infrastructure work' activities, which includes activities such as new sections of road, bridges, batters and embankments. Primary infrastructure work activities:

- Account for 64.2 per cent of all high or very high risk results across all species profiles
- Result in high or very high risks across all hazards, with loss of native vegetation, loss of habitat and fragmentation identified as consistently high or very high risk across the majority of species profiles.

Other Roads and Maritime activities that result in frequent high or very high risk results include 'work within waterways' (17.8 per cent of all high or very high risk results) and 'supporting infrastructure – basins, drains and culverts' (12.5 per cent of all high or very high risk results).

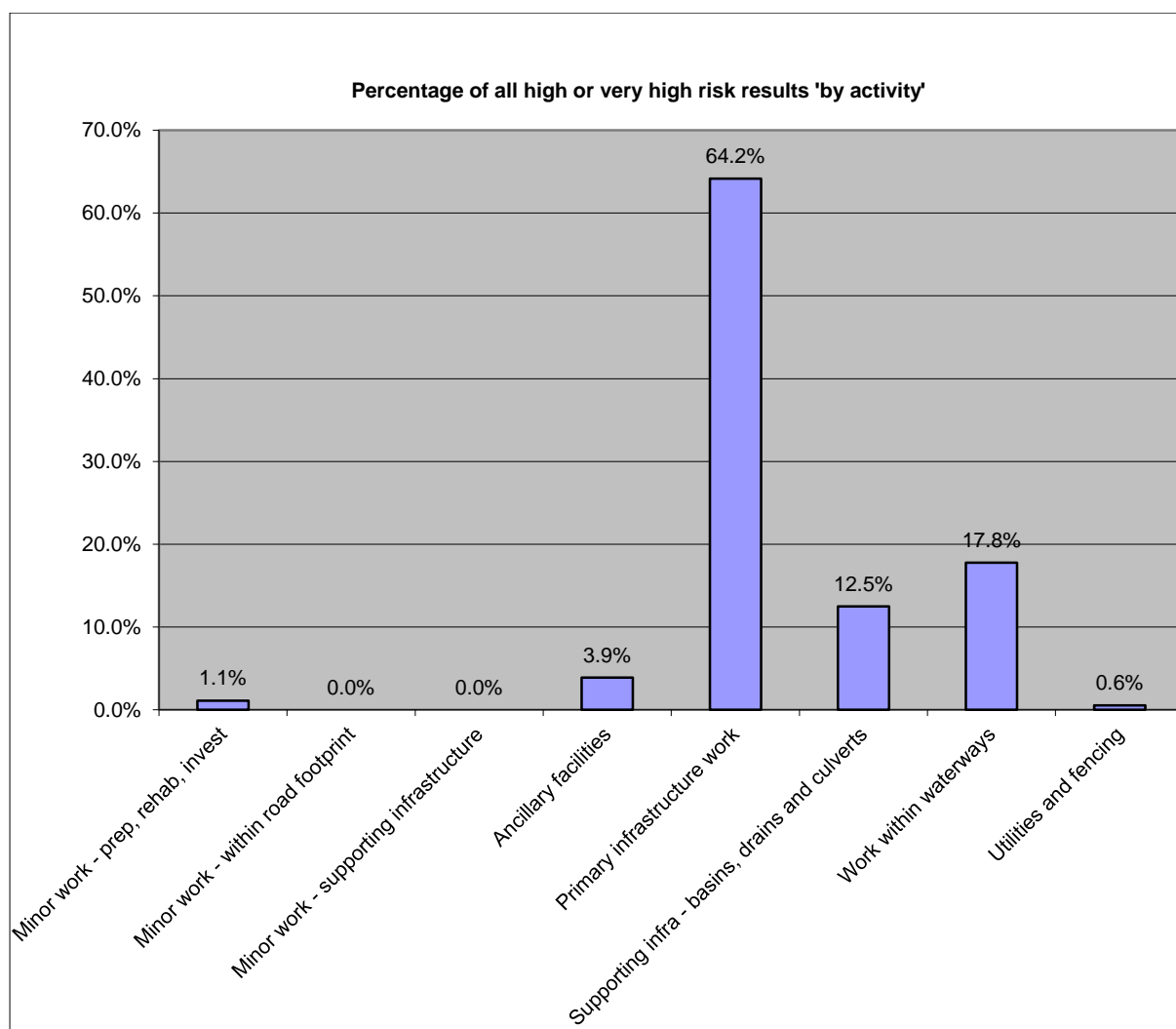


Figure 4-2: Percentage of all high and very high risk results 'by activity'

For all actions excluding 'primary infrastructure work', most of the hazards represented a very low, low or moderate risk to Specified Protected Matters. Hazards with consistently high or very high risk to Specified Protected Matters are discussed further in Section 4.6.2 below.

As can be seen in Figure 4-3 below, when considering high and very high risks as a result of all activities for all Specified Protected Matters, there is generally a consistent spread across all hazards. The hazards most frequently resulting in high or very high risk results in impact profiles are:

- Loss of habitat (15.0 per cent of all high or very high risk allocations)
- Water quality or alterations to flow regimes (13.9 per cent of all high or very high risk allocations)
- Loss of native vegetation and invasive weeds (each 11.7 per cent of all high or very high risk allocations).

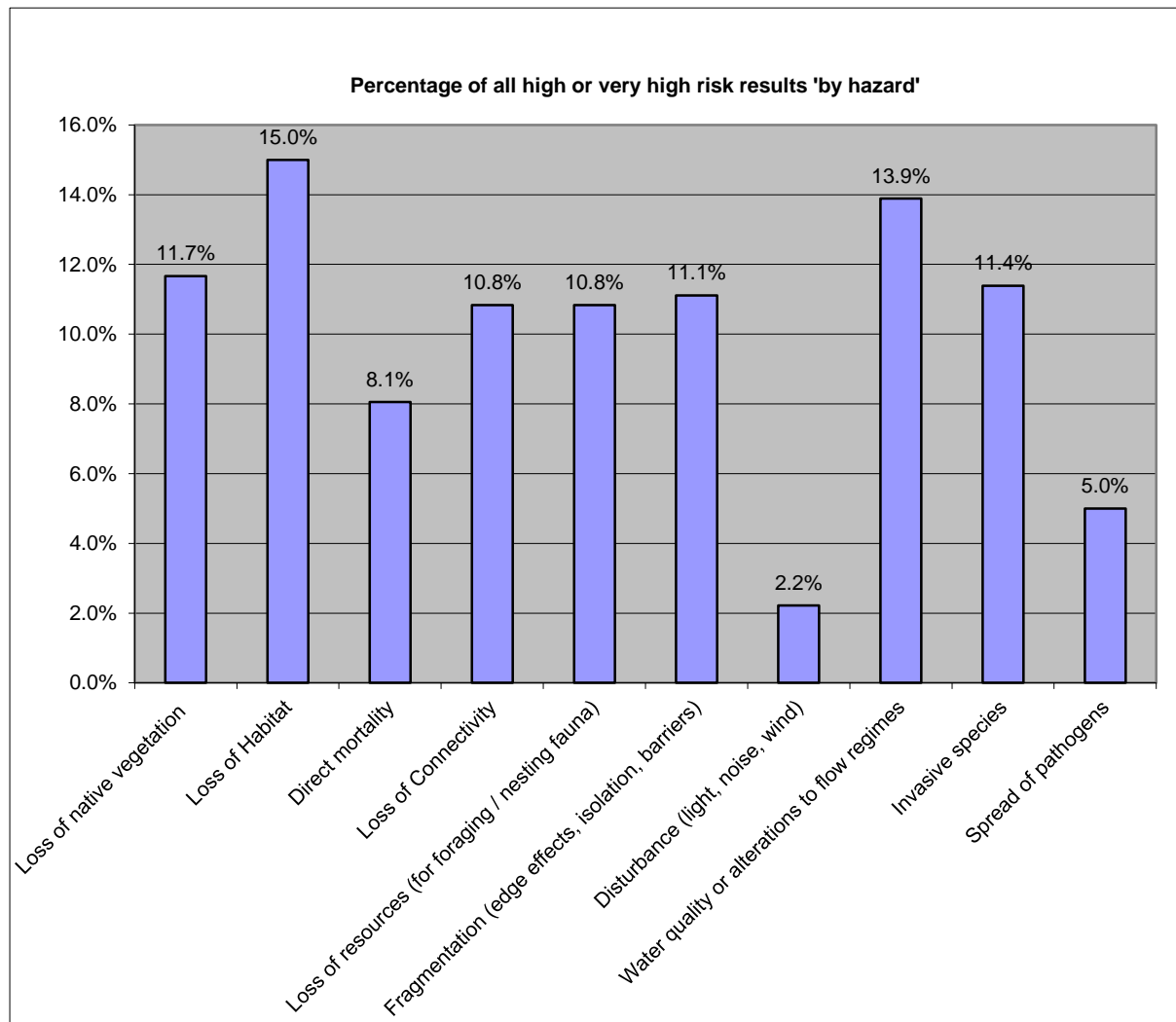


Figure 4-3: Percentage of all high and very high risk results 'by hazard'

4.6.2 *Review of hazards with high and very high risk to Specified Protected Matters*

This section discusses the Roads and Maritime approach to managing the key hazards to Specified Protected Matters.

Loss of habitat and loss of native vegetation

'Loss of habitat' (15 per cent) and 'loss of native vegetation' (11.7 per cent) account for just over one quarter (26.7 per cent) of all identified high and very high risks to Specified

Protected Matters. A substantial proportion (about 78 per cent) of the high or very high risks allocated to these two hazards is associated with ‘primary infrastructure work’ activities.

The following groups of species and vegetation communities were identified as being subject to high and/or very high risks where Roads and Maritime activities have the potential result in native vegetation impact and habitat loss:

- All fauna species groups, including all ‘of interest’ fauna species
- Most flora species
- All vegetation communities.

As identified in Chapter 3, Roads and Maritime manage impacts to vegetation and habitat through the application of the ‘avoid, minimise, mitigate, offset’ hierarchy. For all activities Roads and Maritime require that the presence of threatened species (potential or actual) be identified early in the project development process so that the project design can be developed to avoid identified species and/or communities where possible and minimise unavoidable impacts.

Roads and Maritime requires that detailed ecological information be included in environmental impact assessment documentation and that:

- Minimum requirements for field survey be complied, including application of survey methodology requirements in various guidelines
- Potential direct, indirect and cumulative impacts to current and preliminary listings under the TSC Act, FM Act and the EPBC Act must be considered.

Roads and Maritime applies consultative approach to project development, assessment and delivery. Early community engagement is sought and input sought from expert ecologists and relevant NSW agencies. Appropriate environmental safeguards are developed for application during project implementation. Table 4-2 provides an overview of the approach taken by Roads and Maritime to manage impacts to vegetation and potential for habitat loss during project delivery.

Table 4-2: Managing habitat loss and impacts to vegetation in construction

Issue	Summary of Roads and Maritime requirements
Planning for vegetation clearance	<p>Prior to the commencement of construction, Roads and Maritime require that construction contractors provide details on the approach proposed for the clearing of all vegetation, both living and dead, and the mulching of native trees, stockpiling, and the removal from site and disposal of all materials from built structures, rubbish, weeds and exotic plants.</p> <p>Roads and Maritime require that contractors submit documentation (that includes input by qualified, experienced and where necessary licensed ecologists) on the scope of clearing proposed. Roads and Maritime undertakes an on-site inspection of areas to be cleared and confirms the location and protection of any no-go (sensitive) areas to be retained prior to allowing the contractor to commence any vegetation clearing.</p> <p>These requirements are outlined in detail in Roads and Maritime’s <i>Biodiversity Guidelines</i>, as follows.</p> <p>Pre-clearing process</p> <p>Prior to vegetation clearing proceeding the Guidelines require the following:</p> <ul style="list-style-type: none"> • Review of the environmental assessment and associated documentation for the project to identify known locations of biodiversity features • Identify nearby habitat that would be suitable for the release of fauna that may be encountered during the pre-clearing process or habitat removal

- Development of an unexpected threatened species finds procedure (to be incorporated into the Construction EMP and / or Flora Fauna Management Plan)
- Incorporation of any biodiversity management measures identified during the pre-clearing process into the project Construction EMP and/or project design
- In the weeks prior to commencement of clearing, engage an experienced (and licensed) ecologist to:
 - Confirm the locations of previously identified biodiversity features (including specifically the presence of threatened flora and fauna species that were previously identified)
 - Identify any fauna that have the potential to be disturbed, injured or killed as a result of clearing activities (eg nesting birds)
- In the 24 hour period prior to commencement of clearing, licensed wildlife carers and/or ecologists should:
 - Capture and/or remove and relocate fauna that have the potential to be disturbed, injured or killed as a result of clearing activities
 - Inform clearing contractors of any changes to the sequence of clearing as a result of fauna present if required.

Exclusion zones

An exclusion zone is a designated 'no-go' area that is clearly identified and appropriately fenced to prevent damage to native vegetation and fauna habitats and prevent the distribution of pests, weeds and disease (exclusion zones may also be used to define approved clearing limits for a project).

Exclusion zones are regularly applied in Roads and Maritime projects to limit clearing of vegetation to approved locations, protect threatened flora, threatened ecological communities, conservation areas, habitat features including hollow-bearing trees, aquatic habitats and areas of bushrock.

Roads and Maritime recognise that the correct establishment of exclusion zones can be critical for a project to comply with safeguard requirements and avoid breaches of legislation. For this reason, the *Biodiversity Guidelines* recommend the use of a qualified surveyor to mark out exclusion zones and clearing limits.

The Guidelines also address suitable locations for the storage of materials and stockpiles, including detail on tree protection zones to ensure tree health and root systems are not impacted. Roads and Maritime requires that the construction contractor take protective measures to avoid damaging or destroying threatened flora species and trees which have been marked or otherwise identified for preservation. In line with the guidance on exclusion zones, these measures must include but not be limited to:

- Fencing around trees clear of the canopy line
- Ensuring no materials are stockpiled and no vehicles are parked under the canopy
- Avoiding excavation or the placing of fill near any tree without advice from an ecologist
- Routing haul roads and access tracks clear of the canopy of any retained trees.

Erosion and sediment controls

Before commencing any vegetation clearing, Roads and Maritime also require that all soil erosion and sedimentation controls required for this phase of construction are adequately installed.

Issue**Summary of Roads and Maritime requirements**

Clearing of vegetation and bushrock

Roads and Maritime recognises that clearing of vegetation and removal of bushrock has the potential to displace, injure or kill native flora and fauna, including threatened species, and that nocturnal fauna that shelter in tree hollows during the day and cryptic flora species (such as underground orchids) are at greatest risk during these activities.

The *Biodiversity Guidelines* Guide includes the following requirements:

- An experienced and licensed wildlife carer and/or ecologist should be on site during habitat removal
- A clearing and grubbing plan is developed and the requirements of the clearing and grubbing plan are communicated to site staff regularly
- Clearing of vegetation and/or removal of bushrock does not go beyond the approved clearing limits for the project
- An unexpected threatened species finds procedure is followed if a threatened species is encountered that has not previously been identified.

Staged habitat removal

The Biodiversity Guidelines establish a process for staged habitat removal, as follows:

- Habitat removal is conducted in at least two stages (for example, clearing non-habitat trees at least 24 hours prior to clearing habitat trees) so as to allow respite between the initial disturbance of the clearing process and the final removal of habitat
- The timing of habitat removal considers the seasonal impact of clearing on potentially affected species and if possible, clearing is avoided during times when these species are breeding
- Habitat trees must be carefully felled using equipment that allows the trees to be lowered to the ground with minimal impact (eg. claw extension) and any trees removed must not be felled towards exclusion zones.
- An experienced and licensed wildlife carer and/or ecologist inspects habitat once it is removed (ie. after a tree is felled) and any animals found are captured, inspected for injury then relocated to pre-determined habitat identified for fauna release
- The outcomes of the clearing process must be documented (reporting is usually the responsibility of an ecologist or environment officer) and reports provided to relevant Roads and Maritime staff.

Habitat management

Reuse of woody debris and bushrock

The *Biodiversity Guidelines* require that contract specifications include requirements for woody debris and bushrock to be re-used on site (ie. for habitat improvement) wherever possible. An ecologist is engaged to provide advice on the re-use of woody debris and bushrock to ensure it does not have a negative impact on the receiving environment and to assist in determining appropriate positioning of woody debris and bushrock in designated relocation areas.

Nest boxes

Roads and Maritime recognise that a relatively large proportion of native fauna species rely on tree hollows for roosting, nesting and breeding. Nest boxes can be used to provide supplementary breeding habitat and shelter for hollow-dependant fauna where hollows have been removed. When designed, built, installed and monitored correctly nest boxes can supplement natural fauna habitat.

The *Biodiversity Guidelines* address the provision of supplementary fauna habitat, such as nest boxes. Where nest boxes are identified as an appropriate safeguard or mitigation, Roads and Maritime require that an ecologist be engaged to develop and assist in implementation of a nest box strategy. The

following elements must be considered by the ecologist when developing the nest box strategy:

- The target species, including the tree hollow preferences of native hollow-dependant fauna known or likely to occur in the locality.
- The sizes, types and quantities of potential tree hollows to be removed as well as the sizes, types and quantities of tree hollows existing in adjacent areas.
- The design, materials and quantity of nest boxes required.
- Whether the nest boxes are required to fill a short term gap in the availability of hollows (eg during construction) or to compensate for the long term reduced availability of hollows.
- Monitoring and maintenance of the nest boxes.

Monitoring of each nest box by a qualified ecologist is generally recommended to occur at least every six months during construction, together with targeted monitoring to account for nesting seasons of key target species.

Aquatic habitats and riparian zones

The *Biodiversity Guidelines* provides advice on the removal and / or relocation of snags. It requires that only the minimum number of snags should be disturbed and that the hierarchy below (low to high impact) is followed when snags need to be disturbed:

- Lopping – protruding limbs are cut and allowed to sink to the river bed.
- Realignment – the snag is rotated from its existing position.
- Relocation – the snag is physically moved from one location in the waterway to another location. Relocation of snags should be undertaken so as to cause the least disturbance to the bed or nearby sensitive aquatic habitat.
- Removal – the snag is completely pulled from the water.

Consulted with relevant agencies, such as NSW Department of Primary Industry, is required where snags are affected.

Fragmentation and loss of connectivity

Of all high and very high risks to Specified Protected Matters, the hazards defined as 'fragmentation' (11.1 per cent) and 'loss of connectivity' (10.8 per cent) account for just over one fifth (21.9 per cent). As is the case with the loss of habitat and loss of native vegetation, a substantial proportion (about 72 per cent) of the high or very high risks allocated to these two hazards is associated with 'primary infrastructure work' activities.

The following groups of species and vegetation communities were identified as being subject to high and/or very high risks where Roads and Maritime activities have the potential to cause fragmentation and impact on connectivity:

- Most wetland, stream and riverine dependent fauna species
- Most Dry Sclerophyll fauna, and all Rainforest and Grassland fauna
- Most flora species
- All vegetation communities

Table 4-3 provides an overview of the approach taken by Roads and Maritime to manage fragmentation impacts and loss of connectivity.

Table 4-3: Managing fragmentation impacts and connectivity loss

Issue	Summary of Roads and Maritime requirements
Loss of connectivity	<p>Plants and animals live in populations that are distributed across the landscape based on a range of environmental factors. Animals may move within their environment to access resources such as food and shelter, avoid predators and to reproduce. Roads and Maritime recognise that a species has the greatest chance of surviving where there is connectivity between populations and patches of suitable habitat.</p> <p>Roads and Maritime follows a number of guiding principles for managing wildlife connectivity when developing, designing, assessing and implementing road and traffic management activities:</p> <ul style="list-style-type: none"> • Apply the ‘avoid, minimise, mitigate, offset’ hierarchy • Identify and start to manage wildlife connectivity issues at the earliest stage in the project development process • Maintaining or improving wildlife connectivity opportunities • Consider a landscape-scale perspective • Design wildlife connectivity measures to maximise benefits for all wildlife. <p>Roads and Maritime seeks to develop strategies for addressing wildlife connectivity as early as possible in project planning. Key considerations are to: determine the target species and their requirements; assess connectivity need and options taking account of the landscape context; and identify the location and type of appropriate connectivity measures. Decisions on connectivity measures are informed by advice from expert ecologists, and implemented actions (such as road underpasses, fauna bridges, and fauna poles) are supported by monitoring programs to assess efficacy and inform future approaches for other comparable road projects.</p>
Fragmentation	<p>As identified above, avoiding and minimising the extent of vegetation removal required is the primary measure adopted by Roads and Maritime to limit ecological impacts, including fragmentation effects. Where avoidance is not possible, the <i>Biodiversity Guidelines</i> support steps being taken to re-establish native vegetation at the completion of construction works.</p> <p>All revegetation works must be based on sound ecological principles and designed collaboratively by ecological and landscape design specialists. Revegetation works must use species of local provenance. Native seed collection is typically planned to commence at least 12 months in advance with areas to be cleared considered the priority seed source areas. .</p>

Water quality or alterations to flow regimes

Impacts to water quality or alterations to flow regimes account for about 13.9 per cent of all high and very high risks to Specified Protected Matters. The following activities each account for roughly one third of the high or very high risks allocated to this hazard:

- Primary infrastructure work
- Supporting infrastructure - basins, drains and culverts
- Work within waterways.

The following groups of species and vegetation communities were identified as being subject to high and/or very high risks where Roads and Maritime activities have the potential to impact on water quality or alter flow regimes:

- Some (not all) wetland, stream and riverine dependent fauna species
- Some (not all) wet sclerophyll, rainforest and heathland flora species
- Wetland flora species
- Wet sclerophyll and white box, yellow box, red gum vegetation communities.

Roads and Maritime manage potential impacts to water quality and alterations to flow regimes in a number of ways. In particular, Roads and Maritime applies the requirements of relevant guidelines, including the NSW Government's *Managing Urban Stormwater: Soils and Construction* document which provides principles and recommended minimum design standards for good management practice in erosion and sediment control.

Roads and Maritime applies best practice principles for effective soil and water management, which broadly focus on:

- Planning for erosion and sediment control during the project's design and before any earthworks begin, which includes:
 - Assessment of site constraints
 - Recognising and managing areas of high risk and sensitivity
 - Minimising, through design, the area of soil disturbed and exposed to erosion
 - Protection of riparian areas through identification and avoidance during design and construction planning
- Recognising that risks to water quality as a result of erosion and sedimentation are not limited to the principal work site, and that ancillary locations (such as access tracks, stockpiles and plant storage areas) must also be closely managed
- Controlling water flow through a project area by diverting 'clean' water away from disturbed areas, and ensuring concentrated flows are below erosive levels and sediment is retained
- Dewatering of construction sites in a manner that minimises impacts to the environment, including treatment of captured water to relevant statutory or license criteria
- Capturing storm water to reduce the potential for discharge of polluted water off site, together with reuse of during construction (such as for dust suppression and irrigation of re-vegetated areas)
- Rehabilitation of disturbed lands quickly, including specific strategies for riparian areas to minimise potential downstream impacts
- Maintaining erosion and control measures appropriately.

The above principles are incorporated in the following publicly available Roads and Maritime documents:

- *Code of Practice for Water Management - Road Development and Maintenance*
- *Erosion and Sedimentation Management Procedure*
- *Guideline for the Management of Contamination*
- *Guideline for the Management of Acid Sulfate Soils*
- *Technical Guideline: Environmental Management of Construction Site Dewatering*
- *Technical Guideline: Temporary Stormwater Drainage for Road Construction*
- *Environmental Direction: Management of Tannins from Vegetation Mulch.*

Roads and Maritime recognise that aquatic and riparian zones have an important ecological role in providing habitat and resources for terrestrial and aquatic flora and fauna. In addition to the erosion and sedimentation control measures identified above, the *Biodiversity Guidelines*, specify measures to limit impacts on aquatic biodiversity, and support fish passage. For example, the Guidelines require that removal of riparian vegetation is minimised and restricted to the bank length required for the construction activity. In addition, it requires that refuelling of vehicles and plant, and chemical storage and decanting, does not take place within 50 metres of aquatic habitats or riparian zones.

4.6.3 *Avoiding and minimising risk to Specified Protected Matters*

Application of the Program

As part of the assessment process, each of the Specified Protected Matter impact profiles included in Appendix F considers whether the effectively manages impacts to Specified Protected Matters. Appendix F also includes detail regarding the relevant Roads and Maritime policies, guidelines and procedures considered during the assessment process and the hazard(s) each guideline seeks to manage.

Addressing unacceptable impacts

As discussed in Chapter 3 above, Roads and Maritime will ensure that where a road or traffic management activity is identified through the REF process as likely to significantly impact Specified Protected Matters, measures are applied to ensure such impacts will not be unacceptable. That will include consideration of:

1. Whether there is a real chance or possibility that the activity threatens the long-term survival of any species or community defined as a Specified Protected Matter
2. Consistency with relevant threat abatement plans and recovery plans, and related threatened species initiatives
3. Whether suitable offsets can be secured, including additional or supplementary actions that may be required
4. Any conservation advice and relevant guidelines provided by the Australian Government Department of the Environment.

In the event that, despite best endeavours during the development and planning of a road or traffic management activity, an unacceptable impact on a specified protected matter may occur, Roads and Maritime will:

- Not proceed with the action as proposed
- Re-examine options to reduce the impacts to a level that is acceptable, including through additional offsets or supplementary actions
- Determine whether impacts of the activity are of such significance that it would be more appropriately considered under the environmental impact assessment requirements applicable to state significant infrastructure projects (under Part 5.1 of the EP&A Act)
- Consult with the Australian Government Department of the Environment.

Roads and Maritime will not proceed with the activity until such time as actions have been undertaken, or are committed to be undertaken, to ensure impacts will not be unacceptable.

Practical delivery of Program commitments

As noted in Section 1.6, the Program has been finalised taking account of public submissions and other relevant matters.

Program commitments are identified in the Program Report and practical steps to achieve these are discussed in Chapter 3. That includes on-going review and updating of relevant Roads and Maritime procedures, policies and guidelines that support implementation of the various commitments.

Appendix G provides a summary of the range of typical management measures applied to protect biodiversity during the planning and implementation of Roads and Maritime projects, drawing on recent real-life examples.

4.6.4 *Conclusion – impacts of the Program*

Based on the risk assessment process undertaken for each of the priority groupings of Specified Protected Matters, as documented in the impact profiles, it is concluded that implementation of the Program provides a robust process to minimise the likelihood of unacceptable impacts arising from Roads and Maritime activities.

This is on the basis that the Program, if applied consistently and comprehensively, provides clear mechanisms to avoid and minimise impacts to Specified Protected Matters from project inception through to on-ground delivery. In addition, where unavoidable impacts may occur, the Program makes provision for mitigation measures to be applied and, as last resort, for offsets to be delivered. This approach recognises that the nature of Roads and Maritime activities means that while avoiding impacts is always the first priority, it is not always possible to achieve.

Taken collectively, it is this package of actions within the Program that will assist Roads and Maritime support long-term conservation objectives for Specified Protected Matters, consistent with the principles of ESD and the objects of the EPBC Act. The following chapter of this Strategic Assessment Report considers these matters in more detail.

5 How the Program meets the requirements of the EPBC Act

5.1 EBPC Act requirements

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the EPBC Act as matters of national environmental significance (MNES). Under the EPBC Act, actions that have, or are likely to have, a significant impact on MNES requires approval from the Australian Government Minister for the Environment. The MNES are:

- Listed threatened species and ecological communities
- Migratory species protected under international agreements
- Ramsar wetlands of international importance
- The Commonwealth marine environment
- World Heritage properties
- National Heritage places
- Great Barrier Reef Marine Park
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining development.

Note:

For the purposes of this strategic assessment and the Roads and Maritime program, nationally listed threatened species, ecological communities and migratory species (referred to as Specified Protected Matters) are the only MNES 'in scope'.

A person who proposes to take an action that will have, or is likely to have, a significant impact on a matter of national environmental significance must refer that action to the minister for a decision on whether assessment and approval is required under the EPBC Act. Substantial penalties apply for taking such an action without approval (civil penalties up to \$5.5 million or criminal penalties up to seven years imprisonment).

A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

5.2 EPBC Act required outcomes

For the Program to be endorsed a number of EPBC Act outcomes must be achieved through implementation of the Program. Table 5-1 below demonstrates how the Roads and Maritime Program achieves the following EPBC Act required outcomes:

- Matters of national environmental significance are protected and conserved
- The survival and conservation status of Specified Protected Matters and their critical habitat is promoted and enhanced

- Actions likely to significantly impact MNES are systematically identified and assessed
- A risk-based assessment approach is applied that provides sufficient information for a decision-maker to make an informed decision
- Decisions are made that are deliver certainty, transparency and are legally robust by:
 - Undertaking environmental assessment that adequately addresses all MNES
 - Making approval decisions based on recognised principles of environmental policy
- Systems are transparent and offer appropriate opportunities for public engagement
- Assurance mechanisms are in place so that governments and the community will know that the standards, together with environmental outcomes, are maintained.

Table 5-1: Demonstration of Program delivery of EPBC Act required outcomes

EPBC Act required outcomes	How the Program delivers the required outcomes
<p>Matters of National Environmental Significance (MNES)</p> <p><i>Outcome: Matters of national environmental significance are protected and conserved</i></p> <ul style="list-style-type: none"> • Actions undertaken will not have unacceptable or unsustainable impacts on relevant ‘matters protected’ • Applying the ‘avoid, mitigate, offset’ hierarchy of principles, where an action is likely to have a significant impact on a matter protected: <ul style="list-style-type: none"> – Avoidance of impacts on protected matters, for example through comprehensive planning and suitable site selection – After all reasonable avoidance measures have been put in place, mitigation of remaining impacts. Avoidance and mitigation can reduce and, in some cases, remove the need for offsets. Offsets should not be considered until all reasonable avoidance and mitigation measures are considered – After all reasonable avoidance and mitigation measures have been considered, an assessment is made of any remaining, or ‘residual’, impacts on matters of national environmental significance, and whether those impacts are acceptable – Only after residual impacts have been mitigated as far as possible, may environmental offsetting measures be considered – Offsets must achieve long-term environmental outcomes for matters protected under the EPBC Act and be consistent with either the EPBC Act Environmental Offsets Policy, or another policy achieving the objects of the EPBC Act to an equivalent or better level. 	<p>Roads and Maritime undertakes robust and comprehensive planning for all road and traffic management activities that are subject to Part 5 of the EP&A Act, to inform decision-making on whether an activity will proceed.</p> <p>Roads and Maritime applies an extensive process of options identification, testing and analysis to determine optimal sites for road activities that balance environmental, social and economic objectives. Expert and experienced staff and ecologists are engaged during the assessment process. Community consultation also occurs during the consideration of project alternatives and environmental assessment of the final preferred location and design.</p> <p>Roads and Maritime’s priority is to firstly avoid impacts on biodiversity, including the Specified Protected Matters. Offsets are a last resort, after all practicable options to avoid, minimise, and mitigate impacts have been exhausted. Where offsets are necessary, Roads and Maritime applies robust, scientifically based methods to determine the nature and quantum of offsets required, and works to deliver these using mechanisms that are secure and enduring into the future. Roads and Maritime acknowledges that offset measures in relation to Specified Protected Matters should be applied on a ‘like for like’ basis.</p> <p>Requirements to take direct account of matters of national environmental significance, and to take steps that avoid impacts, are embedded in Roads and Maritime guidelines and procedures, which must be applied to all activities.</p> <p>Relevant Program commitments:</p> <ul style="list-style-type: none"> • Program commitment one (refer Section 3.1) • Program commitments two and three (refer Section 3.2) • Program commitments four and five (refer Section 3.3).

EPBC Act required outcomes

How the Program delivers the required outcomes

Specified Protected Matters

Listed threatened species and ecological communities

Outcome: The survival and conservation status of listed species and ecological communities is promoted and enhanced, including through the conservation of habitat critical to the survival of a species or community and other measures contained in any recovery plans, threat abatement plans or conservation advices.

- Approved actions will not be inconsistent with Australia's international obligations
- Approved actions will not be inconsistent with any recovery plan or threat abatement plan
- Regard is had to any approved conservation advices
- The Program will promote the survival and/or enhance the conservation status of each relevant species or community listed under the EPBC Act.

Listed migratory species

Outcome: The survival and conservation status of migratory species and their critical habitat is promoted and enhanced, consistent with Australia's international obligations.

- Approved actions will not be inconsistent with Australia's international obligations
- The Program will promote the survival and/or enhance the conservation status of each species to which the provision relates.

- Roads and Maritime recognises the need to take all feasible steps to ensure road and traffic management activities do not have adverse long-term consequences for listed threatened species and communities or migratory species.
- During the planning and assessment of road activities subject to Part 5 of the EP&A Act, Roads and Maritime requires full consideration of the direct, indirect and cumulative impacts on biodiversity, including the Specified Protected Matters. Justification for adverse outcomes must be clearly articulated, and assessment of impacts must be based on hard evidence including field surveys undertaken using appropriate scientific methods.
- During the assessment process, and prior to final decision-making, Roads and Maritime takes into consideration the requirements and actions detailed in recovery plans, threat abatement plans, and relevant conservation guidelines. Decisions are informed by expert ecologist advice, drawn from internal staff and external consultants.
- Where unavoidable residual impacts may occur which could have a significant impact on threatened species, Roads and Maritime will take steps to either re-consider the project design and mitigation options, or implement appropriate offsets.
- Roads and Maritime will not proceed with an action that may have an unacceptable or unsustainable impact on the Specified Protected Matters. In the unlikely event that an activity subject to assessment under Part 5 of the EP&A Act is considered likely to reach this impact threshold, Roads and Maritime will implement a range of actions including seeking to reduce those impacts to an acceptable level, and consulting with the Australian Government Department of the Environment.

Relevant Program commitments:

- Program commitments four and five (refer Section 3.3).

EPBC Act required outcomes	How the Program delivers the required outcomes
Identifying Matters of National Environmental Significance (MNES)	
<p><i>Outcome: Deliver certainty and efficiency by systematically identifying actions that are likely to have a significant impact on a matter of national environmental significance.</i></p> <ul style="list-style-type: none"> • There is a process in place for identifying individual MNES • There is an auditable system in place to identify whether proposed actions are likely to have a significant impact on a matter of national environmental significance • Consideration is given to whether an action is likely to have a significant impact on matters of national environmental significance • There has been or will be adequate assessment of the impacts (the EPBC Act defines impact broadly to include direct, indirect and facilitated impacts). 	<p>All Roads and Maritime activities subject to assessment under Part 5 of the EP&A Act require identification and assessment of likely impacts on matters of national environmental significance.</p> <p>Relevant agency procedures stipulate the minimum level of information required, drawing on a combination of existing databases and on-the-ground survey conducted by ecologists in accordance with best practice methods and published species and community specific survey requirements. These also require assessments of significance to be completed for each species and community that may or will be affected by an activity, using both NSW and Australian Government guidelines.</p> <p>It is a statutory requirement for all impacts associated with an activity to be considered during the decision-making process, including direct, indirect, and cumulative outcomes.</p> <p>Roads and Maritime’s consideration of these matters is documented in a Review of Environmental Factors and made publicly available.</p> <p>Relevant Program commitments:</p> <ul style="list-style-type: none"> • Program commitments four and five (refer Section 3.3).
Risk-based assessment	
<p><i>Outcome: Deliver efficiency and transparency by employing assessment approaches that reflect the risk of the proposed action and provide sufficient information for a decision-maker to make an informed decision.</i></p> <ul style="list-style-type: none"> • Assessment approaches (ie the level of environmental assessment, however described) reflect the level of risk of the proposed action to matters of national environmental significance and the amount of information available at the commencement of assessment • The decision-maker will have sufficient information to make an informed decision. 	<p>Roads and Maritime procedures require full assessment of likely impacts of an activity on MNES, informed by up-to-date data on the presence of such matters in the vicinity of a project, assessment of likely impacts, and consideration of the significance of any impacts.</p> <p>Through the REF, the relevant Roads and Maritime delegated decision-maker is provided with all available assessment information to ensure they take account of consequences for MNES. That includes the Review of Environmental Factors, accompanying technical reports (including biodiversity reviews and significant impact assessments), community views and expert opinion provided by specialist agency staff and ecologists.</p> <p>Relevant Program commitments:</p> <ul style="list-style-type: none"> • Program commitments four and five (refer Section 3.3) • Program commitment eight (refer Section 3.5).

EPBC Act required outcomes

How the Program delivers the required outcomes

Adequate environmental assessment and approvals based on good policy

Outcome: Deliver certainty, transparency and legally robust decisions by undertaking environmental assessment that adequately addresses all matters of national environmental significance and making approval decisions based on recognised principles of environmental policy, as set out in the Intergovernmental Agreement on the Environment 1992.

- A report will be prepared that evaluates the environmental impact assessment (or equivalent) and provides recommendations to the decision-maker on whether the proposed action should be approved and, if so, whether any conditions should be attached to the approval
- The decision-maker has regard to the principles of ecologically sustainable development, including the integration of economic, environmental and social considerations, the precautionary principle and the principle that the conservation of biological diversity and ecological integrity should be a fundamental consideration
- If a proposed variation to an approval would result in a substantial increase or change in the nature of the adverse impacts of the action, the proposed variation will be assessed at an appropriate level as a new proposal.

The environmental impact assessment of Roads and Maritime activities subject to Part 5 of the EP&A Act is documented in a Review of Environmental Factors (REF). The REF consolidates all information on the activity into a single document, which considers the project purpose and justification, alternatives, the full range of potential environmental impacts, and appropriate environmental safeguards and mitigation measures that should be applied. The REF is typically supported by specialist technical reports addressing a range of environmental matters, including biodiversity.

In considering whether to proceed with the activity set out in the REF, the decision-maker is legally obliged to take account of the principles of ESD, including the precautionary principle and conservation of biodiversity. These matters are a key object of the EP&A Act. The decision-makers also consider the outcomes of community consultation on the project, including any public submissions.

If a proposal is determined by the decision-maker to proceed, environmental safeguards set out in the REF (or required by the decision-maker) must be implemented. This is achieved via the project contracting process, including the use of quality assurance specifications.

Any modifications or alterations to a determined activity that would change the scope of the project, including likely environmental impacts, are also subject to the environmental assessment requirements of the EP&A Act.

Relevant Program commitments:

- Program commitments four and five (refer Section 3.3)
- Program commitment eight (refer Section 3.5).

EPBC Act required outcomes	How the Program delivers the required outcomes
<p data-bbox="181 263 683 295">Transparent processes and decisions</p> <p data-bbox="181 311 1064 375"><i>Outcome: Systems are transparent and offer appropriate opportunities for public engagement, and decisions are legally robust.</i></p> <ul data-bbox="181 383 1064 518" style="list-style-type: none"> <li data-bbox="181 383 1064 438">• There is adequate opportunity for public consultation throughout the assessment and approval process, where relevant <li data-bbox="181 446 1064 478">• Decisions are free from bias, transparent, consistent <li data-bbox="181 486 1064 518">• Key policy documents informing decision-makers are published. 	<p data-bbox="1108 311 2051 470">Roads and Maritime provides opportunities for community input into decision-making through the life of a project, from inception through to options analysis, impact assessment and during delivery. As part of its commitments under the Program, Roads and Maritime will publicly notify any activities that are likely to significantly impact on the Specified Protected Matters.</p> <p data-bbox="1108 478 2051 598">Decision-making for road activities is made by appropriately senior Roads and Maritime officers. Delegated officers are advised by specialist environmental staff, separate to the project development team, to demonstrate independent and informed decision-making that takes account of all relevant information.</p> <p data-bbox="1108 606 2051 670">Key Roads and Maritime guidelines dealing with the environmental impact of road activities are publicly available.</p> <p data-bbox="1108 678 2051 837">Following determination of an REF, a range of information on the particular activity is made publicly available. That includes the REF itself and any report assessing public submissions. Relevant technical reports may also be made available, together with on-going community updates and newsletters regarding the project.</p> <p data-bbox="1108 853 1534 885">Relevant Program commitments:</p> <ul data-bbox="1108 893 2051 957" style="list-style-type: none"> <li data-bbox="1108 893 2051 925">• Program commitment seven (refer Section 3.4) <li data-bbox="1108 933 2051 957">• Program commitment eight (refer Section 3.5).

EPBC Act required outcomes	How the Program delivers the required outcomes
<p>Assurance</p> <p><i>Outcome: Assurance mechanisms so that governments and the community will know that the standards, together with environmental outcomes, are maintained.</i></p> <ul style="list-style-type: none"> Information is provided to allow the Australian Government to meet its annual reporting obligations under the EPBC Act Appropriate systems are in place to ensure compliance Findings of audits and other appropriate information (ie monitoring data), including management, mitigation or offsets plans relating to matters of on Specified Protected Matters are published. 	<p>As noted above, Roads and Maritime makes information on activities subject to assessment under Part 5 of the EP&A Act publicly available.</p> <p>Roads and Maritime will also make publicly available an annual report that includes information on activities that were determined to proceed, and which were assessed as having a potential significant impact on the Specified Protected Matters.</p> <p>During the implementation of road activities, Roads and Maritime undertakes regular environmental inspections, monitoring of targeted matters, and follows a rigorous incident management system. Collectively, these ensure that required environmental safeguards are being applied and enable corrective actions to be taken if any non-conformance or inadvertent outcomes are identified, consistent with an adaptive management approach.</p> <p>Relevant Program commitments:</p> <ul style="list-style-type: none"> Program commitments nine, 10, 11, and 12 (refer Section 3.6) Program commitment 13 (refer Section 3.7). <p>Program reporting:</p> <ul style="list-style-type: none"> Refer Chapter 4.2 of the Program Report.

5.3 Listed threatened species

5.3.1 *EPBC Act-listed threatened species*

EPBC Act-listed threatened species are those species listed by the Minister for the Environment under the EPBC Act. Approval under the EPBC Act is required prior to commencing any action that has a significant impact on any of the four EPBC Act threatened species listing categories ('extinct in the wild', 'critically endangered', 'endangered', and 'vulnerable'). The definitions of the threatened categories are provided in Section 179 of the EPBC Act as follows:

- **'Extinct in the Wild'** – a species that is not extinct but is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range, or it has not been recorded in its known and or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- **'Critically endangered'** – a species that is listed as critically endangered is a species that, at a particular time, is facing an extremely high risk of extinction in the wild in the immediate future as determined in accordance with the prescribed criteria in Division 7.1 of the EPBC Regulations.
- **'Endangered'** – a species that is not critically endangered and is facing a very high risk of extinction in the wild and the near future as determined in accordance with the prescribed criteria in Division 7.1 of the EPBC Regulations.
- **'Vulnerable'** – a species that is not critically endangered or vulnerable and is facing a high risk of extinction in the wild in the medium-term future, as determine in accordance with the prescribed criteria in the Division 7.1 EPBC Regulations.

5.3.2 *EPBC Act-listed threatened species within NSW*

There are a total of 615 EPBC Act-listed threatened species identified as occurring within NSW and of potential relevance to activities by Roads and Maritime. Of these, 379 are flora species, 236 are fauna species.

For a full list of threatened species subject to this Strategic Assessment and the Program, see Appendix D. Further information on listed threatened species under the EPBC Act can be found on the Department of Environment's website:

<http://www.environment.gov.au/topics/threatened-species-ecological-communities>

5.3.3 *Protection of EPBC Act-listed threatened species*

Roads and Maritime has regard to the *Matters of National Environmental Significance – Assessment of significance guidelines* when considering the impacts of road and traffic management on listed threatened species. Further information on the definitions surrounding significant impacts (based on the guidelines) is outlined below.

Extinct in the wild species

An action is likely to have a significant impact on extinct in the wild species if there is a real chance or possibility that it will:

- Adversely affect a captive or propagated population or one recently introduced / reintroduced to the wild
- Interfere with the recovery of the species or its reintroduction into the wild.

Critically endangered or endangered species

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population
- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations
- Adversely affect habitat critical to the survival of a species
- Disrupt the breeding cycle of a population
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- Introduce disease that may cause the species to decline
- Interfere with the recovery of the species.

Vulnerable species

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of an important population of a species
- Reduce the area of occupancy of an important population
- Fragment an existing important population into two or more populations
- Adversely affect habitat critical to the survival of a species
- Disrupt the breeding cycle of an important population
- Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
- Introduce disease that may cause the species to decline
- Interfere substantially with the recovery of the species.

Habitat critical to the survival of a species or ecological community

'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)

- To maintain genetic diversity and long term evolutionary development
- For the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to, habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and / or habitat listed on the Register of Critical Habitat maintained by the Minister under the EPBC Act.

Population of a species

A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- A geographically distinct regional population, or collection of local populations
- A population, or collection of local populations, that occurs within a particular bioregion.

An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as 'important populations' in recovery plans, and / or that are:

- Key source populations either for breeding or dispersal
- Populations that are necessary for maintaining genetic diversity, and / or
- Populations that are near the limit of the species range.

Assessment of activities under the EPBC Act

Environmental assessment under the EPBC Act requires analysis of the potential impacts (direct, indirect and cumulative) to listed threatened species or their habitat. Under the EPBC Act, an action or class of actions should not be approved:

- If it would be inconsistent with Australia's obligations under:
 - The Biodiversity Convention
 - The Apia Convention
 - The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- If it would be inconsistent with a recovery plan for the species or a threat abatement plan
- Without regard for approved conservation advice available for a species or community.

In assessing and undertaking road activities that are subject to Part 5 of the EP&A Act, Roads and Maritime will be consistent with Australia obligations under international treaties. The following documents will be considered when assessing the potential impacts and risks to listed threatened species:

- Recovery plans
- Threat abatement plans
- Conservation advice.

Box 5-1 below provides information on recovery plans, threat abatement plans and conservation advice.

Box 5-1 EPBC Act documentation supporting threatened species assessment

Recovery plans

The Australian Minister for the Environment may make or adopt and implement recovery plans for threatened fauna, threatened flora (other than conservation dependent species) and threatened ecological communities listed under the EPBC Act. Recovery plans set out the research and management actions necessary to stop the decline of, and support the recovery of, listed threatened species or threatened ecological communities. The aim of a recovery plan is to maximise the long term survival in the wild of a listed threatened species or ecological community.

Recovery plans should state what must be done to protect and restore important populations of listed threatened species and habitat, as well as how to manage and reduce threatening processes. Recovery plans achieve this aim by providing a planned and logical framework for key interest groups and responsible government agencies to coordinate their work to improve the plight of listed threatened species and/or ecological communities.

Threat abatement plans

The EPBC Act provides for the identification and listing of key threatening processes. Key threatening processes threaten or may threaten the survival, abundance or evolutionary development of a native species or ecological community. For example, invasive species listed as key threatening processes are predation by the European red fox, feral rabbits or unmanaged goats.

The assessment of a threatening process as a key threatening process is the first step to addressing the impact of a particular threat under Australian Government law. The Australian Minister for the Environment may decide whether to have a threat abatement plan for a threatening process in the list of key threatening processes established under the EPBC Act.

Threat abatement plans provide for the research, management, and any other actions necessary to reduce the impact of a listed key threatening process on native species and ecological communities. Implementing the plan should assist the long term survival in the wild of affected native species or ecological communities. Threat abatement plans contain objectives and actions which relate to mitigating or reversing the impacts of a key threatening process.

Conservation advice

When a native species or ecological community is listed as threatened under the EPBC Act, conservation advice is developed to assist its recovery. Conservation advice provides guidance on immediate recovery and threat abatement activities that can be undertaken to ensure the conservation of a newly listed species or ecological community.

Conservation advice includes practical on-the-ground activities that can be implemented by local communities, natural resource management groups or interested individuals, such as landholders. Conservation advice may also include broader management actions which can be undertaken by organisations such as local councils, government agencies or non-government organisations, to protect the listed threatened species or ecological community on a regional level.

5.3.4 NSW guidance documents for threatened species

Roads and Maritime will also consider relevant NSW guidelines in relation to threatened species that are listed under both the NSW TSC Act and FM Act, and the EPBC Act. NSW guidelines applicable to listed threatened species are identified in the species impact profiles provided in Appendix F. By way of example, for listed threatened species, the following are relevant NSW guidelines identified in the species impact profiles:

- *North East New South Wales Natural Resource Management Advisory Series: Note 7 – Bat Roosts (DEC), 2003)*
- *Threatened Species Management Information Circular No. 6: hygiene protocol for the control of disease in frogs (NPWS, 2008)*
- *Declaration of critical habitat for Mitchell's Rainforest Snail (Thersites mitchellae) in Stotts Island Nature Reserve (NPWS, 2001)*

- *North East New South Wales Natural Resource Management Advisory: Note 1 – Trees with Hollows* (DEC, 2004)
- *Flying-fox camp management policy* (DECC, 2007).

5.4 Threatened Ecological Communities

An ecological community is a naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat. Its structure, composition and distribution are determined by environmental factors such as soil type, position in the landscape, altitude, climate and water availability. Types of ecological communities listed under national environmental law include woodlands, grasslands, shrublands, forests, wetlands, marine, ground springs and cave communities (DotE, 2014).

Ecological communities that are considered matters protected under Part 3 of the EPBC Act (under Section 18 and 18A) are those that are listed as ‘critically endangered’, or ‘endangered’. The definitions of these threatened ecological communities categories are provided in Section 182 of the EPBC Act as follows:

- **‘Critically endangered’** – an ecological community that is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria in Division 7.1 of the EPBC Regulations
- **‘Endangered’** – an ecological community that is not critically endangered and is facing a very high risk of extinction in the wild in the near future as determined in accordance with the prescribed criteria in Division 7.1 of the EPBC Regulations.

5.4.1 EPBC Act-listed ecological communities within NSW

There are a total of 33 EPBC Act-listed threatened ecological communities identified as occurring within NSW. A full list of threatened ecological communities subject to this Strategic Assessment and the Program is provided in Appendix D. Further information on listed threatened ecological communities under the EPBC Act can be found on the Department of Environment’s website:

<http://www.environment.gov.au/topics/threatened-species-ecological-communities>

5.4.2 Protection of EPBC Act-listed Threatened Ecological Communities

Roads and Maritime has regard to the *Matters of National Environmental Significance – Assessment of significance guidelines* when considering the impacts on listed threatened ecological communities. According to the guidelines an action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- Reduce the extent of an ecological community
- Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines
- Adversely affect habitat critical to the survival of an ecological community
- Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community’s survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns

- Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting
- Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
 - Assisting invasive species, that are harmful to the listed ecological community, to become established
 - Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community
 - Interfere with the recovery of an ecological community.

Assessment of activities under the EPBC Act

Environmental assessment under the EPBC Act requires analysis of the potential impacts (direct, indirect and cumulative) to listed ecological communities. Under the EPBC Act, an action or class of actions should not be approved:

- If it would be inconsistent with Australia's obligations under:
 - The Biodiversity Convention
 - The Apia Convention
 - The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- If it would be inconsistent with a recovery plan for the community or a threat abatement plan
- Without regard to approved conservation advice available for a species or community.

In implementing the commitments set out in the Program, Roads and Maritime will be consistent with Australia obligations under international treaties. The following matters will be considered by Roads and Maritime when assessing the potential impacts and risks to listed ecological communities:

- Recovery plans
- Threat abatement plans
- Conservation advice.

5.4.3 NSW guidance documents for ecological communities

Roads and Maritime will also consider relevant NSW guidelines in relation to ecological communities that are listed under the TSC Act, FM Act and the EPBC Act. Where relevant, NSW guidelines applicable to listed ecological communities are identified in the species impact profiles provided in Appendix F.

Examples of relevant NSW guidelines and initiatives identified in the species impact profiles:

- A targeted approach for managing threatened ecological communities (such as *Blue Gum High Forest of the Sydney Basin Bioregion*) under the 'Saving our Species' conservation project (OEH 2014)
- Guidelines for protecting and restoring *Blue Gum High Forest of the Sydney Basin Bioregion* and also for best practice guidelines (DECC 2008a and b)
- The National Recovery Plan for Natural Temperate Grassland of the Southern Tablelands of NSW and the ACT (Environment ACT 2006).

5.5 Migratory species

Listed migratory species protected under the EPBC Act pass through or over Australian waters during their annual migrations. Examples of listed migratory species are shorebirds (many of which breed in the northern hemisphere), sea birds (e.g. albatrosses and petrels), mammals (e.g. whales) and reptiles (e.g. sea turtles).

The list of migratory species established under Section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China-Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Environment Minister, such as the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

5.5.1 EPBC Act-listed migratory species within NSW

There are a total of 62 EPBC Act-listed migratory species identified as occurring within NSW. A full list of species, which includes migratory species, subject to this Strategic Assessment and the Program is provided in Appendix D. Further information on migratory species listed under the EPBC Act can be found on the Department of Environment's website:

<http://www.environment.gov.au/topics/biodiversity/migratory-species>

5.5.2 Protection of migratory species under the EPBC Act

Roads and Maritime follows the *Matters of National Environmental Significance – Assessment of significance guidelines* when considering the impacts of road activities on migratory species. An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

An area of 'important habitat' for a migratory species is habitat:

- Utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species
- That is of critical importance to the species at particular life-cycle stages
- Utilised by a migratory species which is at the limit of the species range
- Within an area where the species is declining.

Listed migratory species cover a broad range of species with different life cycles and population sizes. Therefore, what is an 'ecologically significant proportion' of the population varies with the species (each circumstance will need to be evaluated). Some factors that

should be considered include the species' population status, genetic distinctiveness and species specific behavioural patterns (for example, site fidelity and dispersal rates).

'Population', in relation to migratory species, means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries including Australia.

Assessment of activities under the EPBC Act

The Program requires analysis of the potential impacts (direct and indirect) to listed migratory species or their habitat. Under the EPBC Act, an action or class of actions should not be approved if it would be inconsistent with:

- The Bonn Convention
- CAMBA
- JAMBA
- An international agreement approved under sub-section 209(4) of the EPBC Act.

Roads and Maritime will be consistent with Australia's obligations for the protection of migratory species as set out in applicable international treaties. Consideration will be given to relevant:

- Recovery plans, threat abatement plans and conservation advices - where migratory species are also threatened species
- Wildlife conservation plans.

Wildlife conservation plans

The Minister for the Environment may make a wildlife conservation plan for the purposes of the protection, conservation and management of the following:

- *A listed migratory species that occurs in Australia or an external Territory*
- *A listed marine species that occurs in Australia or an external Territory*
- *A species of cetacean that occurs in the Australian Whale Sanctuary*
- *A conservation dependent species.*

A wildlife conservation plan must provide for the research and management actions necessary to support survival of the migratory species, marine species, species of cetacean or conservation dependent species concerned. Plans may cover one or more species.

5.5.3 NSW guidance documents for migratory species

Roads and Maritime will also consider relevant NSW guidelines in relation to migratory species listed under the TSC Act, FM Act and the EPBC Act. For listed migratory species, the following are examples of relevant NSW guidelines, with particular focus on wetland and coastal bird species in certain locations that would typically be considered by Roads and Maritime:

- *Kooragang Nature Reserve and Hexham Swamp Nature Reserve - Plan of Management* (NSW National Parks and Wildlife Service 1998)
- *Best practice guidelines: Managing threatened beach-nesting shorebirds* (NSW Department of Environment and Climate Change 2008)
- *Narran Lake Nature Reserve - Plan of Management* (NSW National Parks and Wildlife Service 2000).

5.6 Safeguards under the Program

Roads and Maritime, through implementation of the Program commitments, endeavours to support the long-term survival of listed threatened species, ecological communities, migratory species and their habitats. Roads and Maritime applies these commitments at all stages of the project life cycle. For example, Roads and Maritime procedures require that the assessment of an activity explicitly takes into account the criteria in the *Matters of National Environmental Significance – Assessment of significance guidelines*.

Under the Program, Roads and Maritime will:

- Promote the conservation of biodiversity as a key priority in the development, planning, assessment and implementation of road and traffic management activities
- Apply the avoid, minimise, mitigate and offset hierarchy during project development, environmental assessment and decision-making
- Comprehensively assess potential environmental impacts of its activities, incorporating advice from appropriate and experienced ecologists with respect to the Specified Protected Matters and taking into account up-to-date information and conservation guidance
- Apply robust procedures for the protection of biodiversity during construction and subsequent operation of road facilities, including through contractual arrangements and inspection, auditing, monitoring and incident reporting systems
- Act consistently with Australia's international environmental obligations for the conservation of biodiversity
- Work cooperatively with relevant Australian Government, state and local governments, industry, indigenous groups, local organisations and the community during the development and planning of road and traffic management activities
- Provide appropriate opportunities for community input into decision-making, including during the environmental assessment of projects
- Take community feedback into consideration during decision-making.

Roads and Maritime will not proceed with an action that will have an unacceptable impact on any Specified Protected Matter(s). In determining whether an unacceptable or unsustainable impact will occur, Roads and Maritime will:

- Consider whether there is a real chance or possibility that the activity threatens long-term survival of specific protected matters, such that extinction may occur
- Ensure that the impact assessment has considered the consistency of an activity with relevant threat abatement plans and recovery plans, wildlife conservation plans / advices, bioregional plans and related threatened species initiatives
- Consider whether suitable offsets can be secured, including additional or supplementary actions that may be required.

6 Promoting ESD and biodiversity conservation

This Chapter identifies how the Program will promote ESD and biodiversity conservation. In accordance with the Terms of Reference, it considers how the Program would meet the objects of the EPBC Act (including the principles of ESD), be consistent with obligations under international agreements and how the Program would enhance the survival or conservation status of the Specified Protected Matters.

6.1 Meeting the objects of the EPBC Act

This section identifies how the Program will meet the objects of the EPBC Act (including the principles of ESD) as relevant to the assessment of the Specified Protected Matters.

6.1.1 *Object (a) of the EPBC Act*

‘To provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance’

In accordance with the *Environmental Policy Statement 2012*, Roads and Maritime is committed to carrying out its business in an environmentally responsible manner by effectively identifying and managing any risks which may potentially impact the environment.

Roads and Maritime is also committed to environmental management being an essential element of effective road related infrastructure during all project stages, from planning through to construction, maintenance and operation. Roads and Maritime takes all reasonable practical steps to ensure there is continuous improvement in environmental performance, including ongoing communication and awareness raising, active reporting of environmental incidents and continuous learning from experience.

Roads and Maritime is committed to environmental management being an essential element of effective road related infrastructure planning, construction, maintenance and operation which must be properly considered and integrated into all phases of Roads and Maritime projects.

The Program provides a practical framework for scoping, preparing and decision-making for all Roads and Maritime activities subject to Part 5 of the EP&A Act. It provides for comprehensive consideration of impacts on matters of national environmental significance and where projects are approved, incorporates compliance requirements to address both direct and indirect impacts.

The Program ensures that all environmental impacts and risks to the environment resulting from activities by Roads and Maritime are assessed to the fullest extent possible, in accordance with legislative requirements under NSW and Australian Government legislation, available information and best practice approaches.

For the purposes of the strategic assessment the relevant matters of national environmental significance are the Specified Protected Matters, comprising nationally listed threatened species, populations and migratory species. As identified in Chapter 3, Roads and Maritime have a number of detailed guidelines that provide for protection of the environment, and

which are part of the overall Program. These are examples of the direct action taken by Roads and Maritime to support conservation of Specified Protected Matters and to:

- Ensure that the hierarchy of avoid, minimise, mitigate and offset is followed so that an activity does not result in unacceptable impacts to a listed threatened species or ecological community
- Take account of any approved conservation advice and guidelines for Specified Protected Matters decision-making
- Ensure that any activity does not result in unacceptable impacts to a listed threatened species or ecological community
- Apply and enforce other relevant supporting environmental legislation to minimise risks of unacceptable impacts
- Ensures that decision-makers are provided with sufficient information on the relevant impacts of a proposed action, including consideration of community views.

6.1.2 *Object (b) of the EPBC Act*

‘To promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources’

The Program supports implementation of the principles of ESD through:

- Decision making processes that effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- Application of the precautionary principle where appropriate within the planning and development decision-making processes
- Ensuring that there is sufficient information on the relevant impacts of a proposed action so that informed decisions are made on whether or not to approve a proposed action, and if so, what conditions or environmental safeguards might apply
- Ensuring that direct, indirect and cumulative impacts on the Specified Protected Matters are identified and assessed in the EIA process.

In NSW, the commitment to the concept of environmental sustainability is expressed in current legislation. It is an object of the EP&A Act to encourage ESD (Section 5(vii)). The EP&A Act refers to the *NSW Protection of the Environment Administration Act 1991* (PEA Act) for a definition of ESD. Principles and programs aimed at achieving ESD are defined in Section 6(2) of the PEA Act.

Roads and Maritime’s *Environment Policy Statement 2012* requires specific consideration of the principles of ESD during the planning, assessment and undertaking of road and traffic management activities. Roads and Maritime pragmatically implement this requirement through a range of guidelines and procedures, including through its *Ecologically sustainable development practice note* (ESD Practice Note – EIA N02) (refer Box 6-1 below).

To promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources Roads and Maritime will:

- Maintain ESD as a corporate environmental policy commitment
- Continue to promote the requirement to address the principles of ESD at all stages of development in its guidelines
- Continue to apply the precautionary principle where appropriate within the planning and development decision-making processes, supported by comprehensive information on potential impacts and appropriate safeguards

- Ensure that direct, indirect and cumulative impacts are identified and assessed in EIA processes
- Continue to involve relevant community stakeholders through the EIA process taking into account inter and intra-generational requirements.

Box 6-1: ESD Practice Note

The Practice Note has been developed to ensure Roads and Maritime addresses the principles of ESD in relation to its road and traffic management activities.

The Practice note requires that ESD must be addressed in all EIA documents, including preliminary environmental investigations and assessments, preliminary environmental assessments, and reviews of environmental factors (REFs). It requires demonstration of how ESD principles have been considered throughout the development of a project and how ESD considerations will influence the construction and operation phases.

The Practice Note specifically emphasises the REF to document the consideration of ESD undertaken during development of alternatives and design options, justification of the project, and as part of the assessment of specific environmental impacts. That includes recognition that assessing impacts of a project on biodiversity is an essential element of ESD consideration, including application of the precautionary principle.

Roads and Maritime also recognises that considering ESD is a key element of taking account of the public interest in decision-making.

6.1.3 Object (c) of the EPBC Act

'To promote the conservation of biodiversity'

As indicated in Chapter 4, after applying a risk based assessment of impacts associated with Roads and Maritime activities, it is considered that the implementation of the Program would be unlikely to result in an unacceptable impact to the Specified Protected Matters. This is supported by commitments in the Program Report to take actions in the event that such impacts were identified. That would include not proceeding with the activity as proposed, re-examining options to reduce impacts, and consultation with the Australian Government Department of the Environment (refer Section 3.1 of the Program Report).

As also discussed in Chapter 3 above, the Program incorporates a range of elements aimed at promoting the conservation of biodiversity and full consideration of biodiversity impacts during decision-making. That includes:

- Applying the hierarchy of avoid, minimise, mitigate and offset in the planning and development process
- Offsetting only once all reasonable and practicable avoidance and minimisation measures have been exhausted
- Through the REF process, ensuring that recovery, threat abatement plans, conservation advice and wildlife conservation plans are considered as part of the decision making
- Taking account of community views on a project
- Implementing on-ground actions and environmental safeguards
- Implementing appropriate monitoring, auditing and inspection regimes tailored to the project and supporting adaptive management.

6.1.4 *Object (d) of the EPBC Act*

‘To promote a co-operative approach to the protection and management of the environment involving governments, the community, land holders and indigenous peoples’

Consistent with its *Community Charter*, Roads and Maritime strongly advocates and provides for community involvement in all phases of planning for a project. Roads and Maritime also recognises that protection of the environment is a shared responsibility, requiring joint efforts of all levels of government and the community. In support of a co-operative approach to the protection and management of the environment Roads and Maritime:

- Works to strengthen inter-governmental co-operation to minimise duplication and ensure that community views are able to be heard and taken into account
- Works with other NSW agencies to ensure best practice environmental assessment of activities subject to Part 5 of the EP&A Act
- Provides publicly accessible information on Roads and Maritime projects, including assessment and community consultation documentation, together with broader EIA policies and guidelines
- Specifically consults with landowners affected by projects, and indigenous communities with cultural knowledge of areas likely to be impacted.

6.1.5 *Object (e) of the EPBC Act*

‘To assist in the co-operative implementation of Australia’s international environmental responsibilities’

Roads and Maritime recognises the need to ensure that activities subject to the Program support the delivery of Australia’s obligations under relevant international treaties. That generally includes the Convention on Biological Diversity, together with a range of specific agreements covering migratory species (for example, the CAMBA, JAMBA and ROKAMBA conventions).

As discussed in Chapter 3, the Program makes clear provision for comprehensive assessment of all aspects of biodiversity, including the Specified Protected Matters. Implementation of the Program in a robust and consistent manner provides clear opportunity to ensure that any impacts of Roads and Maritime activities that may detract from Australia’s international efforts are identified and avoided.

The Program requires Roads and Maritime take into account a range of guidelines and procedures targeted at the conservation of biodiversity, including species protected under international agreements. That includes specific biodiversity guidance that addresses EPBC Act requirements with respect to significance assessment with direct reference to application of the Australian Government’s *Matters of National Environmental Significance – Assessment of significance guidelines* (DEWHA, 2009), and consideration of relevant survey and assessment requirements.

In accordance with the Program, Roads and Maritime will take into account the objectives and actions outlined in relevant recovery plans, threat abatement plans or specific conservation guidance issued by the Australian Government. It will also apply species guidelines for assessing the significance of impacts arising from road and traffic management projects, such as the *Draft EPBC Act Policy Statement 3.21 – Significant Impact Guidelines for 36 Migratory Shorebird Species* (DEWHA, 2009).

Consistent with overall Program commitments, Roads and Maritime will not proceed with an activity until such time as actions have been undertaken, or are committed to be undertaken, to ensure impacts on species protected under international agreements are not unacceptable.

6.1.6 *Objects (f) and (g) of the EPBC Act*

‘To recognise the role of indigenous peoples in the conservation and ecologically sustainable use of Australia’s biodiversity’

‘To promote the use of indigenous people’s knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge’

Roads and Maritime recognises the connections between Aboriginal culture and country, including the significance of Australia’s native plants, animals and landscape to indigenous communities. Consistent with the *NSW Government Plan for Aboriginal Affairs*, Roads and Maritime strives to provide meaningful opportunities for Aboriginal people to participate in decision-making on road and traffic management activities that affect their communities and heritage, and to enable local knowledge to inform decision-making.

Roads and Maritime has already demonstrated delivery of this in practice, through application of the *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*. This is applied to all projects to ensure that the views of Aboriginal people regarding their cultural heritage are considered and respected during project development and implementation.

In delivering the commitments under the Program, Roads and Maritime will undertake community consultation with a range of key stakeholders including indigenous communities and organisations. Community contributions will be taken into account during project decisions, and information on issues raised and Roads and Maritime’s response will be made publicly available, except in those circumstances where the information may be culturally sensitive.

6.2 Enhancing survival or conservation status of Specified Protected Matters

The guidelines, procedures and mechanisms that comprise the Program require consideration of recovery plans, threat abatement plans, and relevant conservation plans to promote the conservation of biodiversity. The Program also sets out clear requirements for identifying Specified Protected Matters that may be affected by Roads and Maritime activities, documenting the extent and nature of those impacts (significance), and measures to minimise impacts. As a last resort, the Program also makes provision for offsets to be provided for any remaining, unavoidable significant impacts.

It is recognised that the nature of Roads and Maritime activities is such that there will be some projects where impacts on Specified Protected Matters do occur and cannot be completely avoided. However, implementation of all the elements of the Program is intended to support recovery and threat management programs in enhancing long-term prospects for survival and to promote the conservation of Specified Protected Matters. As a safeguard, the Program Report (Section 3.1) also outlines actions to be taken in the unlikely event that a proposed activity was identified as potentially having an unacceptable impact.

7 Program evaluation and review

Roads and Maritime recognises that ensuring the effectiveness of the Program in safeguarding Specified Protected Matters is an on-going task. The Program is not static; it is flexible and must have the capacity to respond to emerging information, conservation practice and approaches.

Chapter 2 of this report outlines the commitments with respect to ensuring that particular elements of Program, such as Roads and Maritime environmental impact assessment procedures, are subject to regular review and updating. These commitments will ensure that the consideration of road and traffic management activities, and implications for the Specified Protected Matters, takes account of matters such as national species listings, contemporary conservation advice, and evolving methods for field assessment and calculation of both impacts and offset requirements.

This section outlines the higher level actions to ensure the overall Program through its entire life-time is able to function effectively and is consistent with the objectives of the EPBC Act. These have been developed in consideration of the national assurance framework developed by the Australian Government to support implementation of bilateral agreements.

7.1 Program evaluation

Roads and Maritime will:

- Review the operation of the Program within 18 months of endorsement by the Minister for the Environment to assess its initial performance and ensure that any impacts from implementation of the Program are, as a minimum, not having an unacceptable impact on Specified Protected Matters
- Thereafter, review the Program on a five-yearly basis.

The review will enable Roads and Maritime to determine if refinements to management arrangements and standards are required to ensure the commitments with respect to Specified Protected Matters are being delivered by the Program.

Terms of reference for each review will be developed and agreed in consultation with the Australian Government.

Outcomes of the reviews will be provided to the Australian Government Minister for the Environment and made publicly available.

In addition, it is acknowledged that the Australian Government may initiate an independent audit of the Program's implementation. Roads and Maritime will work with the Australian Government and any independent auditor to support the undertaking of any audit. By agreement, an audit may also substitute for one of the planned regular reviews discussed above.

7.2 Program reporting

Roads and Maritime will maintain information on road and traffic management activities subject to the Program, as part of its individual project management systems. That will include retaining documentation with respect to project design, environmental assessment,

decision-making and implementation (ie compliance inspections). Information will be publicly available regarding activities that have been determined to proceed following completion of environmental assessment.

Roads and Maritime will also make publicly available an annual report that includes information on activities assessed under Part 5 of the EP&A Act that were determined to proceed, and which were assessed as having a potentially significant impact on the Specified Protected Matters. The report will include the following matters and any other specific information required by the Australian Government:

- Identify the project
- Identify the Specified Protected Matters impacted by the activity
- Summarise the nature and extent of impacts on the Specified Protected Matters
- Summarise the public consultation process for the project
- Identify any mitigation or offset measures applied.

7.3 Program modification

If during the course of implementing the Program, or arising from the periodic reviews identified in Section 7.1, issues are identified that may require substantive modification of Roads and Maritime operational practices, consultation will first occur with the Department of the Environment. Roads and Maritime will endeavour to ensure that any necessary operational adjustments are implemented to ensure the Program endorsement is maintained and the overarching aim of avoiding unacceptable impacts to Specified Protected Matters.

8 References and information sources

General

Commonwealth of Australia (2010a), *Survey Guidelines for Australia's Threatened Bats*

Commonwealth of Australia (2010b), *Survey Guidelines for Australia's Threatened Birds*

Commonwealth of Australia (2010c), *Survey Guidelines for Australia's Threatened Frogs*

Commonwealth of Australia (2013), *A guide to undertaking strategic assessments*

Infrastructure NSW (2012), *State Infrastructure Strategy 2012*

ISO 9001:2008, Quality Management Systems

ISO 14001:2004, Environmental Management Systems

Keith D (2004), *Ocean Shores to Desert Dunes: the native vegetation of New South Wales and the ACT*, NSW National Parks and Wildlife Service, Sydney.

Landcom (2004), *'Managing Urban Stormwater: Soils and Construction'* (the Blue Book), 4th edition, NSW Government

NSW Department of Climate Change (2009), *Biobanking Assessment Methodology and Credit Calculator Operational Methodology*

NSW Department of Planning (1995), *Is an EIS required?: best practice guidelines for part 5 of the Environmental Planning and Assessment Act 1979*

NSW Department of Premier and Cabinet (2011). *2021: A plan to make NSW number one*, NSW Government: Sydney

NSW Department of Urban Affairs and Planning (1996), *Roads and Related Facilities*

NSW Department of Urban Affairs and Planning (1999), *Is and EIS required?: Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979*

NSW Department of Urban Affairs and Planning (1999), *how is the proposal likely to affect the biological aspects of the environment*

NSW Office of Environment and Heritage (2003), *Environmental Impact Assessment Guidelines for the Green and Golden Bell Frog (Litoria aurea)*

Transport for NSW (TfNSW) (2012). *NSW Long Term Transport Master Plan*. Transport for NSW: Sydney.

Specified Protected Matters

Commonwealth of Australia, Department of the Environment (2013), *Matters of National Environmental Significance, EPBC Act - Significant Impact Guidelines (SIG 1.1) for threatened species*.

Commonwealth of Australia, Department of Environment, Water, Heritage and the Arts (2009), *Matters of National Environmental Significance – Assessment of significance guidelines*, replaced by *Matters of National Environmental Significance – Significant impact guidelines 1.1* (Commonwealth Department of Environment 2013)

Commonwealth of Australia, Department of Environment, Water, Heritage and the Arts (2009), *Draft EPBC Act Policy Statement 3.21 – Significant Impact Guidelines for 36 Migratory Shorebird Species*

NSW Department of Climate Change (2007), *Threatened species assessment guidelines – assessment of significance*

Roads and Maritime Published documentation

RMS, *Environmental assessment procedure for project review of environmental factors (EIA-PO5-2)*

RMS, *Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects (RTA 2011)*

RMS, *Guidance Note - Environmental Inspection Report (2014)*

RMS, *Environmental Incident Classification and Reporting Procedure (2014)*

RMS, *Environmental Policy Statement (2012)*

Roads and Maritime internal documentation

RMS, *Guideline for Biodiversity Offsets (2011)*

RMS, *Environmental Impact Assessment Guidance: Practice Note - Ecologically Sustainable Development (EIA-N02)*

.