



# **Operational Environmental Management Plan**

## **Part C of the Maintenance Manual**

### **Bonville Pacific Highway Upgrade**

Prepared by:  
Abigroup Contractors Pty Ltd



## Abbreviations

AG	Activity Guideline
AS	Australian Standards
ASS	Acid Sulfate Soils
BBS	Bilfinger Berger Services
BSC	Bellingen Shire Council
CoC	Conditions of Concurrence
CHCC	Coffs Harbour City Council
DECC	Department of Environment and Climate Change
DoP	Department of Planning (NSW)
DPI	Department of Primary Industries (NSW)
DWE	Department of Water and Energy (NSW)
EA	Environmental Assessment
EEC	Endangered Ecological Community
EIAR	Environmental Impact Audit Report
EIN	Environmental Improvement Notice
EIR	Environmental Incident Report
EIS	Environmental Impact Statement
EMS	Environmental Management System
ESD	Ecologically Sustainable Development
GPT	Gross Pollutant Trap
HMP	Heritage Management Sub Plan
ISO	International Organisation for Standards
MCoA	Ministers Conditions of Approval
NPWS	National Parks and Wildlife Service (NSW) (incorporated in DECC)
NSW	New South Wales
NZS	New Zealand Standard
OEMP	Operational Environmental Management Plan
ONMP	Operational Noise Management Sub Plan
REF	Review of Environmental Factors
RTA	Roads and Traffic Authority (NSW)
SEPP	State Environmental Planning Policy
SOP	Standard Operating Procedures
SWMP	Soil and Water Management Sub Plan
SWTC	Scope of Works and Technical Criteria
WRMP	Waste and Reuse Management Sub Plan

## Definitions

**Commissioning** – this is the phase when construction completion is achieved (the Construction Completion Certificate has been obtained) and the operational phase commences.

**Construction Completion** – the date when all construction works, including any final works on local roads etc have been finalized and the Construction Completion Certificate is obtained.

**Road opening** – the date of the major traffic switch. This is the date on which traffic was transferred from the old Pacific Highway to this new section of the Pacific Highway.

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## Details of Revision Amendment

### Plan Control

The latest version of this plan will be available on the Abigroup Intranet System for all Project personnel. Distribution of the plan will be to those detailed on the distribution listing below. This distribution will be by "hard copy" or electronically via 'Teambinder' for those using 'Teambinder'.

The Maintenance Manager (BBS) will maintain, review and update this plan.

Copy No.	Issued to	Name
1	RTA Project Director	Colin Solomon
2	Environmental Management Representative	Martin Hicks
3	DoP	Mark Turner
4	DECC (EPA)	Scott Hunter or as advised
5	DECC (NPWS)	Craig Harre
6	DPI Fisheries	Max Enklaar
7	DWE (formally DLWC)	-
8	Coffs Harbour City Council	Gary Leonard
9	Bilfinger Berger Services	-
10	Abigroup	Neil Pittaway
	Abigroup	Rebecca Walker-Edwards

## Amendment

Each new revision to the plan will be distributed to all registered copyholders with an instruction that the superseded copy be destroyed or marked as superseded. The revision number is included at the end of the document number, which is noted on each page. When amendments occur, the document or relevant section will be reissued with the revision number updated accordingly.

The Maintenance Manager (BBS) will approve amendments by initial in the Approval column below.

The following provides a record of amendments made to this document:-

Revision	Date	Description	Revised by	Comments received
Draft	March 2008	Draft OEMP for comment to RTA	Prepared by RWE	May 2008
Draft Rev 0	May 2008	Draft Rev 0 sent to agencies for comment. Rev 0 also revised following RTA comments	Prepared by RWE. Reviewed by DECC, DPI, RTA, Councils, EMR etc	June – July 2008
Draft Rev 1	September 2008	Reviewed following comments received from agencies – sent to RTA	Rev 1 prepared by RWE.	2-3 October 2008
Rev 2	6 October 2008	Version to EMR for certification	Rev 2 prepared by RWE.	5 November
Rev 3	7 November 2008	Revised following DoP comments	Rev 3 prepared by RWE	

# **1 Introduction**

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## **1.1 Background**

Abigroup Contractors Pty Ltd (Abigroup) is contracted with the RTA to design, construct and maintain for 10 years the Bonville Pacific Highway Upgrade at Bonville, south of Coffs Harbour. This 9.6km upgrade involves the construction of a dual carriageway highway, and commences from the south adjacent to Perry’s Road, bypassing Bonville village and finishes at the junction of Lyons Road approximately 11kms south of Coffs Harbour.

Much of the project was constructed through or adjacent to areas with high environmental value. These environments included Bongil Bongil National Park, endangered ecological communities and areas containing threatened flora species and fauna habitat. The upgrade also involved the construction of several waterway crossings, including those over Bonville Creek, Pine Creek and Reedys Creek. The location of environmentally sensitive areas are indicated on a set of Sensitive Area Plans (SAP’s) provided for in **Appendix 1** and commented on in Section 2.7.

This Operational Environmental Management Plan (OEMP) for the Bonville Upgrade Pacific Highway Project (the Project) provides a system and procedures to ensure that Bilfinger Berger Services Australia (BBS) establish and maintain best practice controls to manage potential environmental impacts during the operational phase of the Project. Abigroup were responsible for the construction phase of the project. The maintenance responsibilities have been novated to BBS. BBS are a subsidiary company of Bilfinger Berger Services Group.

BBS are committed to providing the services they offer in a manner that conforms to the contractual requirements and to all relevant regulatory and legislative requirements.

BBS will perform the traffic management, surveillance and incident management and maintain the Bonville Upgrade section of the Pacific Highway including all the requirements for repair, refurbishment, replacement and reconstruction as required. Operational and maintenance activities of the Bonville Upgrade include:

- landscaping and maintenance of the roadside vegetation;
- maintenance of bridge structures and pavements;
- maintenance of batters, sedimentation basins and drainage infrastructure;
- maintenance of fencing, fauna fencing and related infrastructure required for habitat protection;

- monitoring effectiveness of fauna crossing structures / glider crossing areas; and
- monitoring of the effectiveness of operational noise controls.

Abigroup has developed this OEMP on behalf of BBS and the NSW Roads and Traffic Authority (RTA) to address and effectively manage the environmental aspects and associated impacts related to the 10 year operation and maintenance of the Highway.

## **1.2 Description and Location of the Project**

The location of this project is shown in Figure 1.1. It extends from Perrys Road, near Repton at the southern end to Lyons Road at the northern extent. The route crosses three creeks, Reedys Creek, Bonville Creek and Pine Creek as well as crossing Lyons Road, Williams Road, Bonville Station Road, East Bonville Road, Archville Station Road and Mailman's Track.

In addition to this, the route passes through Bongil Bongil National Park and Pine Creek State Forest.

The main features of the project are:

- grade separated interchanges at Archville Station Road and Mailmans Track;
- connection with the Lyons Road interchange;
- three bridges crossings over Bonville Creek, Reedys Creek and Pine Creek;
- new service road on the eastern side of the Highway from Chainage 95700 to Perrys Road;
- roundabout at the intersection of the new service road and Mailmans Track;
- heavy vehicle inspection bay just south of Hunters Forest Road;
- local road upgrades, including overpasses at Williams Road, Bonville Station Road and East Bonville Road;
- extensive landscaping of the Highway corridor;
- fauna mitigation measures, such as fencing, a fauna overpass and several fauna underpasses;
- noise attenuation mounds and walls within the vicinity of populated areas of the Highway north of Archville Station Road as well as stone mastic asphalt surfacing north of Reedys Creek and acoustic treatment of some individual residences; and
- relocation of existing services and flood and drainage attenuation measures.

The following table summarises the main elements of the Project:

**Table 1.1: Project Design Features**

Length	9.8 km Starting south of Perrys Road, Repton Finishing north of Lyons Road, Boambee
Local Govt Area	Coffs Harbour City Council / Bellingen Shire Council
Road Specifications	Four x 3.5m lanes with inner and outer shoulders. Medians 3.0m – 15m depending on location. Plain concrete pavement with hessian dragged concrete to Reedy Creek. North of Reedy Creek pavement is reinforced concrete with a stone mastic asphalt overlay.
Cut and Fill	Cuttings up to 15m Cut material taken: 1.25M m <sup>3</sup> (final volumes to be determined by detailed design) Fill material required: 1.0Mm <sup>3</sup> (final volumes to be determined by detailed design)
Other Features	Noise barriers, mounds or individual property treatment as required. Landscaping along the full project length. Grassed swales/channels to control runoff. Diversion channels, level spreaders, contour drains to control erosion. Sediment traps, filters, basins, retention ponds, wetlands to control sediment and nutrients in discharges. Fauna crossings.

**Figure 1.1:** Location and alignment of the approved project



### **1.3 Objectives of the OEMP**

The primary purpose of the OEMP is to provide an easily interpreted reference document that ensures that the project environmental commitments, safeguards and mitigation measures from the environmental planning documents, project approvals, and the Project Deed and Scope of Works and Technical Criteria (SWTC) are implemented. It aims to minimise impacts associated with the operation of the road at adjacent sensitive receivers (as shown in the sensitive area drawings contained within **Appendix 1**).

By documenting the environmental management processes to be adopted by BBS during the operation and maintenance phase of the project, systematic risk management and control can be implemented to minimise potential environmental impacts following completed construction and handover.

The OEMP is designed to be a flexible document providing continual feedback and improvement throughout its life. If a non-conformance is detected in the OEMP and/or the associated sub plans, if project implementation methodologies change, or if safeguard methodologies improve, the OEMP will be modified so that it remains continually effective in managing environmental impacts from the project.

The NSW Minister for Urban Affairs and Planning (now the Minister for Planning) approved the Bonville Upgrade Project in March 2000. Subsequent to this approval, further representations were made to the RTA to change the route and layout through Pine Creek State Forest. RTA modified the route and modified approval was issued by the Minister for Infrastructure and Planning (now the Minister for Planning) in 2004, with funding being committed by the Federal Government for the Project. Approval was given subject to 73 conditions. Those conditions relating to the operation and maintenance of the Bonville Upgrade Project are detailed in **Appendix 2**.

In September 1999, the National Parks and Wildlife Services (NPWS) provided eighteen concurrence conditions of approval (CoC), all relating to pre-construction and construction activities.

The environmental objectives for the EMP in the maintenance period are:

- to satisfy MCoA 15 and other key operational requirements contained within the MCoA;
- to monitor environmental impacts relating to the operation of the Bonville Upgrade, as identified in this document and related sub plans;
- to document the requirements for environmental monitoring and the maintenance of environmental infrastructure and assets;
- to develop, implement and maintain effective management systems for the environmental aspects of maintenance works;
- to ensure compliance with relevant legislation, regulatory requirements and environmental documents;
- to maximise the value and outcomes of environmental monitoring activities so that the information can be applied to the planning and implementation of future projects;
- to be consistent with the elements of the Australian / New Zealand Standard 14001: 2004 – Environmental Management Systems (referred to as AS/NZS ISO 14001).

## **1.4 Scope and format of the OEMP**

The OEMP for the operational and maintenance period has been prepared to primarily address the requirements of MCoA 15.

The OEMP consists of the main OEMP document (this document), four (4) Operational Management Sub-plans and eleven (11) Standard Operating Procedures (Environmental) annexed to this OEMP document.

The OEMP Framework is depicted in Figure 1.2 below.

Where relevant, cross references have been identified to facilitate the interpretation of information and avoid duplication.

**Figure 1.2: Maintenance Document Framework**



Standard Operating Procedures (SOPs) support the OEMP and the Maintenance Manual. They provide site specific, technical information in a 'step-by-step' format that will ensure that the project requirements are implemented in a timely and acceptable manner.

## **1.5 Environmental Policy**

Bilfinger Berger Services Australia (BBS) will ensure that its environmental policy, operational procedures and maintenance methods are understood, implemented and maintained by personnel and subcontractors at all levels involved with the Project through its ongoing project induction and environmental awareness training programs.

BBS's Quality, OHS and Environmental Policy is provided in Figure 1.3 on the preceding page.

**Figure 1.3:** BBS Quality, OHS and Environmental Policy



### **Quality, OHS and Environmental Policy**

At Bilfinger Berger Services we are committed to ensuring a culture where the providing high quality services in a safe and environmentally sustainable manner is paramount.

We believe that high quality, environmentally sound and safe business is good business. As a result, the removal or management of all OHS risk, environmental impacts and defects is the backbone of our philosophy. To assist us in continuing to deliver exceptional safety, quality and environmental outcomes we implement the following objectives:

- Creating a culture that is focussed on the development of quality, environmental and OHS awareness at all levels of the organisation: ensuring that all personnel are responsible for their actions and are properly trained in and adhere to relevant policies, procedures and safe methods of operation.
- Develop performance measures and indicators that proactively identify potential problems and identify preventative actions. Ensure that these measures and indicators form an integral part of management accountability.
- Ensure operational procedures and risk assessments exist for and are employed on all tasks.
- Conduct regular audits including independent audits of field activities, business processes and procedures
- Ensure that all incidents are reported, recorded and root cause analysis conducted, and that we develop an environment where reporting problems, incidents and accidents are welcomed as an opportunity to enhance our business processes.
- Providing products and services which satisfy our client's requirements and comply with contractual legislative and regulatory obligations
- Establishing overall quality/safety and environmental management systems and programs that are certified and consistent with the requirements of AS/NZS ISO 9001, 4801 and 14001, the needs of our customers and employees.
- Ensuring that our staff are adequately trained and experienced for the task at hand including the provision of adequate and suitably qualified staff to maintain our management systems
- Developing an organisational culture that promotes personal development and responsibility, as well as creating a no-blame, learning, self-evaluation approach to all functions and tasks.



- Monitoring of subcontractors and suppliers and implementing cultural education programs to align their values and aspirations with those of ourselves
- Ensure that the environmental impact of our works is minimised to prevent pollution.
- Creating an environment that celebrates the measurement and comparison of performance as a mechanism for personal and organisational growth and improvement.

These objectives provide the framework upon which we are able to give a firm commitment to provide safe high quality and environmentally sound business outcomes in everything we do. To ensure the achievement of these goals and to continually improve the effectiveness of our system, measurable objectives and targets will be developed and reviewed on a regular basis.

A handwritten signature in black ink, appearing to read 'Mark Elliott'.

Mark Elliott  
Managing Director  
**Bilfinger Berger Services  
(Australasia) Pty Limited**

3<sup>rd</sup> November 2005

## **2 Planning**

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### **2.1 Planning Process Context**

The OEMP has been prepared close to the end of the construction stage and will come into effect following construction completion and at the commencement of operation. This is otherwise known as the commissioning phase.

### **2.2 OEMP Requirements**

This plan has been prepared to fulfil the requirements of the Department of Planning NSW (DoP) Condition of Approval No. 15 for the Bonville Pacific Highway Upgrade project. Condition of Approval 15 states:

*An Environmental Management Plan (EMP) (Operation Stage) shall be prepared prior to the commencement of operation. The Plan shall be prepared in accordance with the conditions of this approval, all relevant Acts and Regulations and accepted best practice management procedures. The EMP (Operation Stage) shall address at least the following issues:*

- (i) identification of the statutory and other obligations which the Proponent is required to fulfil, including all licences/approvals and consultations/agreements required from authorities and other stakeholders, and key legislation and policies which control the Proponent's operation of the project;*
- (ii) sampling strategies and protocols to ensure the quality of the monitoring programme, including specific requirements of the EPA and DLWC;*
- (iii) monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental performance of the project during its operation, including description of potential site impacts, performance criteria, specific tests and monitoring requirements, protocols (eg. frequency and location) and procedures to follow;*
- (iv) steps the Proponent intends to take to ensure compliance with all plans and procedures;*
- (v) consultation requirements, including relevant government agencies, the local community and Council, and complaints handling procedures; and*
- (vi) strategies for the main environmental system elements and including but not limited to: noise and vibration; water; land slip/settlement; air quality; erosion and sedimentation; access and traffic; property acquisition and/or adjustments; heritage and archaeology; groundwater; contaminated spoil; waste/resource management/removal/disposal; flora and fauna; hydrology and flooding; visual screening, landscaping and rehabilitation; hazards and risks; energy use, resource use and recycling; and utilities.*

*Specific requirements for some of the main environmental system elements referred to in (iv) shall be as detailed under the conditions of this approval and/or as required under any licence or approval.*

*The Plan shall be prepared in consultation with the EPA, DLWC, NSW Fisheries, NPWS and Coffs Harbour City Council and any other relevant government agency nominated by the Director-General.*

*The EMP (Operation Stage) shall require approval by the Director-General prior to commissioning or within such time as otherwise agreed to by the Director-General.*

*The EMP shall be certified as being in accordance with the conditions of approval by the EMR prior to seeking approval of the Director-General.*

*The EMP (Operation Stage) shall be made publicly available.*

*All sampling strategies and protocols undertaken as part of the EMP (Operation Stage) shall include a quality assurance/quality control plan and shall be approved by the relevant regulatory agencies to ensure the effectiveness and quality of the monitoring programme. Only accredited laboratories can be used for laboratory analysis.*

Table 1 addresses the Condition 15 criteria.

**Table 1: Requirements of Minister’s Condition of Approval 15**

<b>Requirement of Condition 15</b>	<b>OEMP Reference</b>
An Environmental Management Plan (EMP) (Operation Stage) shall be prepared prior to the commencement of operation.	This document
The Plan shall be prepared in accordance with the conditions of this approval, all relevant Acts and Regulations and accepted best practice management procedures.	OEMP Sections 1 and 2 <b>Appendix 2, 3 and 4</b>
The EMP (Operation Stage) shall address at least the following issues: (i) identification of the statutory and other obligations which the Proponent is required to fulfil, including all licences/approvals and consultations/agreements required from authorities and other stakeholders, and key legislation and policies which control the Proponent’s operation of the project;	OEMP Sections 1 and 2 <b>Appendix 2, 3 and 4</b>
(ii) sampling strategies and protocols to ensure the quality of the monitoring programme, including specific requirements of the EPA and DLWC;	OEMP Section 5 and Sub Plans
(iii) monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental performance of the project during its operation, including description of potential site impacts, performance criteria, specific tests and monitoring requirements, protocols (eg. frequency and location) and procedures to follow;	Sub Plans and the Maintenance Manual
(iii) steps the Proponent intends to take to ensure compliance with all plans and procedures;	OEMP Section 5
(iv) consultation requirements, including relevant government agencies, the local community and Council, and complaints handling procedures; and	Section 3.3

<p>(v) strategies for the main environmental system elements and including but not limited to: noise and vibration; water; land slip/settlement; air quality; erosion and sedimentation; access and traffic; property acquisition and/or adjustments; heritage and archaeology; groundwater; contaminated spoil; waste/resource management/removal/disposal; flora and fauna; hydrology and flooding; visual screening, landscaping and rehabilitation; hazards and risks; energy use, resource use and recycling; and utilities;</p> <p>Specific requirements for some of the main environmental system elements referred to in (iv) shall be as detailed under the conditions of this approval and/or as required under any licence or approval.</p>	<p>OEMP Section 4 and 5 and Relevant Sub Plans and Standard Operating Procedures</p>
<p>The Plan shall be prepared in consultation with the EPA, DLWC, NSW Fisheries, NPWS and Coffs Harbour City Council and any other relevant government agency nominated by the Director-General.</p>	<p>Section 3.3</p>
<p>The EMP (Operation Stage) shall require approval by the Director-General prior to commissioning or within such time as otherwise agreed to by the Director-General.</p>	<p>Section 2.4</p>
<p>The EMP shall be certified as being in accordance with the conditions of approval by the EMR prior to seeking approval of the Director General.</p>	<p>Section 2.4</p>
<p>The EMP (Operational Stage) shall be made publicly available.</p>	<p>Section 2.4</p>
<p>All sampling strategies and protocols undertaken as part of the EMP (Operation Stage) shall include a quality assurance/quality control plan and shall be approved by the relevant regulatory agencies to ensure the effectiveness and quality of the monitoring programme. Only accredited laboratories can be used for laboratory analysis.</p>	<p>Section 5.2 and the relevant Sub Plans and Standard Operating Procedures</p>

Other environmental compliance conditions are listed in Appendix 2 of the OEMP.

## 2.3 OEMP Consultation

In accordance with the project’s Conditions of Approval, the OEMP, sub plans and standard operating procedures are to be prepared in consultation with the following key environmental stakeholders:

- Department of Environment and Climate Change (DECC);
- Department of Water and Energy and DECC (Coastal) (formerly both part of DNR);
- Department of Primary Industries (Fisheries);
- Coffs Harbour City Council (CHCC);
- the Environmental Management Representative (EMR);
- the Roads and Traffic Authority (RTA);
- Bellingen Shire Council (BSC).

This draft version of the OEMP will be circulated for comment from the above stakeholders and revisions will be made where appropriate.

## **2.4 Approval Process**

Following the review of the draft OEMP and sub plans by relevant agencies and the RTA, the revised OEMP will be forwarded to the Project Environmental Management Representative for certification. Once complete, the OEMP and relevant sub plans will be forwarded to the RTA for referral to the Director General of the Department of Planning for approval.

Following approval, the OEMP and sub plans will be made publicly available. The OEMP will be available for viewing by the public at the Abigroup site office, at the RTA Pacific Highway Office located in Grafton.

## **2.5 Legal and Regulatory Obligations**

Maintenance and monitoring activities must be planned and implemented in accordance with all relevant legal and regulatory requirements.

### **2.5.1 Legislative Requirements, Permits and Licences**

State environmental legislation that may be relevant to the operational period is listed in **Appendix 3** to this OEMP, along with any related approvals, permits and/or licences that may be relevant.

Once the construction phase is completed and the operational stage commences there will be some sediment basins that will still need to be operated as construction stage basins in accordance with the Environment Protection Licence (EPL). Compliance with the conditions of this licence will be required until DECC agree to its relinquishment. This generally occurs when the catchments to the sediment basins are fully stabilised with vegetation.

### **2.5.2 Deed Requirements**

The Project Deed prescribes requirements for the maintenance and/or monitoring of a range of environmental aspects of the upgrade. The following key references were considered in the preparation of the OEMP:

- *Environmental Impact Statement, Volume One, Bonville Project Pacific Highway Coffs Harbour, PPK Environment & Infrastructure, July 1998;*

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- *Environmental Impact Statement, Appendices / Volume Two, Bonville Project Pacific Highway Coffs Harbour, PPK Environment & Infrastructure, July 1998;*
- *Environmental Impact Statement Summary Booklet, Bonville Project Pacific Highway Coffs Harbour, PPK Environment & Infrastructure;*
- *Environmental Impact Statement Noise Figures, Bonville Project Pacific Highway Coffs Harbour, PPK Environment & Infrastructure, July 1998;*
- *Species Impact Statement, Bonville Project Pacific Highway Coffs Harbour, PPK Environment & Infrastructure, July 1998;*
- *Representations Report (four volumes), The Bonville Project, Environmental Technology, July 1999;*
- *Concurrence Report for the Proposed Pacific Highway Upgrade from Mailmans Track to Lyons Road, Bonville, National Parks and Wildlife Service, September 1999;*
- *Flora and Fauna Review of Proposed Pacific Highway Upgrade at Bonville, Report to the Department of Urban Affairs and Planning, Peter Smith, November 1999;*
- *Approval Issued by the Minister for Infrastructure and Planning, 2 March 2000;*
- *Environmental Impact Assessment – Director General’s Report, s115C of the Environmental Planning and Assessment Act 1979, Department of Urban Affairs and Planning, Feb 2000;*
- *Review of Environmental Factors – Modifications to the Approved Project, Bonville Deviation, Parsons Brinckerhoff, Sept 2002;*
- *Proposed Modifications to the Approved Project, Bonville Deviation Submissions Report, RTA Environmental Technology Branch, Pacific Highway Office, July 2003;*
- *Decision Report – REF Modifications, Bonville Deviation, September 2003;*
- *Proposed modification – Director General’s Report, s115C of the Environmental Planning and Assessment Act 1979, Department of Urban Affairs and Planning, Aug 2004;*
- *Modified Activity Approval, Section 115B of the EP&A Act 1979, Minister for Infrastructure and Planning, Minister for Natural Resources, 15 December 2004;*
- *Modification of Determination – Bonville Project, RTA, 13 Jan 2005;*
- *Appendix 4 of the SWTC - Additional Environmental Requirements;*
- *Appendix 5 of the SWTC – Provisions for Fauna;*
- *Additional Environmental Requirements*
- *SWTC Appendix 14 Environmental Management Plan Guidelines*

- SWTC Appendix 25 Code of Maintenance Standards
- QA Specification DCMG36: Environmental Protection (Management System)
- Other documents as listed in Schedule 19 of the Deed, and summarised in **Appendix 4** of the OEMP.

## 2.6 Environmental Sub plans

Environmental sub plans have been prepared to address four key environmental elements. Table 2.1 provides an outline of the issues addressed in each sub plan.

Where relevant, cross references have been highlighted in each sub plan and the Maintenance Manual as well as standard operating procedures.

The following table lists the OEMP sub plans.

**Table 2.1: OEMP Sub Plans**

Minister's Condition of Approval	OEMP Sub plan	Located in this OEMP
AC 17	Soil and Water	As an attachment
AC 25	Noise and Vibration	As an attachment
AC 51	Non-Indigenous Heritage	As an attachment
AC 62	Waste and Reuse	As an attachment

## 2.7 Environmentally Sensitive Areas

To aid in the identification and protection of significant environmental features associated with the project, a set of Sensitive Area Plans (SAPs) have been prepared. These plans provide information relevant to the maintenance period and must be considered prior to commencing any work activity that may require vegetation or ground disturbance.

The Bonville Pacific Highway Upgrade intersects numerous sensitive sites including Bongil Bongil National Park, Pine Creek State Forest, endangered ecological communities, wetlands and riparian areas.

It crosses a number of significant waterways, including Bonville Creek, Pine Creek and Reedys Creek. Other unnamed watercourses and wetlands flow through the project in several locations.

Threatened vegetation along the project alignment impacted on by the project works have been translocated during the construction phase. There are three translocation sites, all of which are identified on the sensitive area plans.

Heritage sites occurred at numerous locations across the site and 'Consent to Destroy' permits were obtained for these. Perhaps the most significant site is BPS04 which is located on the southern bank of Bonville Creek, and on which conditions were imposed to ensure that no excavation at occurs in this area.

There are no contaminated sites on the project alignment.

## **3 Implementation of the OEMP**

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Maintenance activities will be implemented in a manner that achieves a result consistent with legislative and approval requirements as well as client requirements for reliability, safety and protection of the environment.

### **3.1 Structure, Responsibility and Resources**

The 10 year maintenance phase of the Bonville Upgrade Project will be carried out by Bilfinger Berger Services Australia (BBS). The maintenance responsibilities have been novated from Abigroup Contractors Pty Ltd to BBS. The scope of BBS's responsibility for maintenance lies within the main alignment corridor and the shared bicycle/pedestrian path.

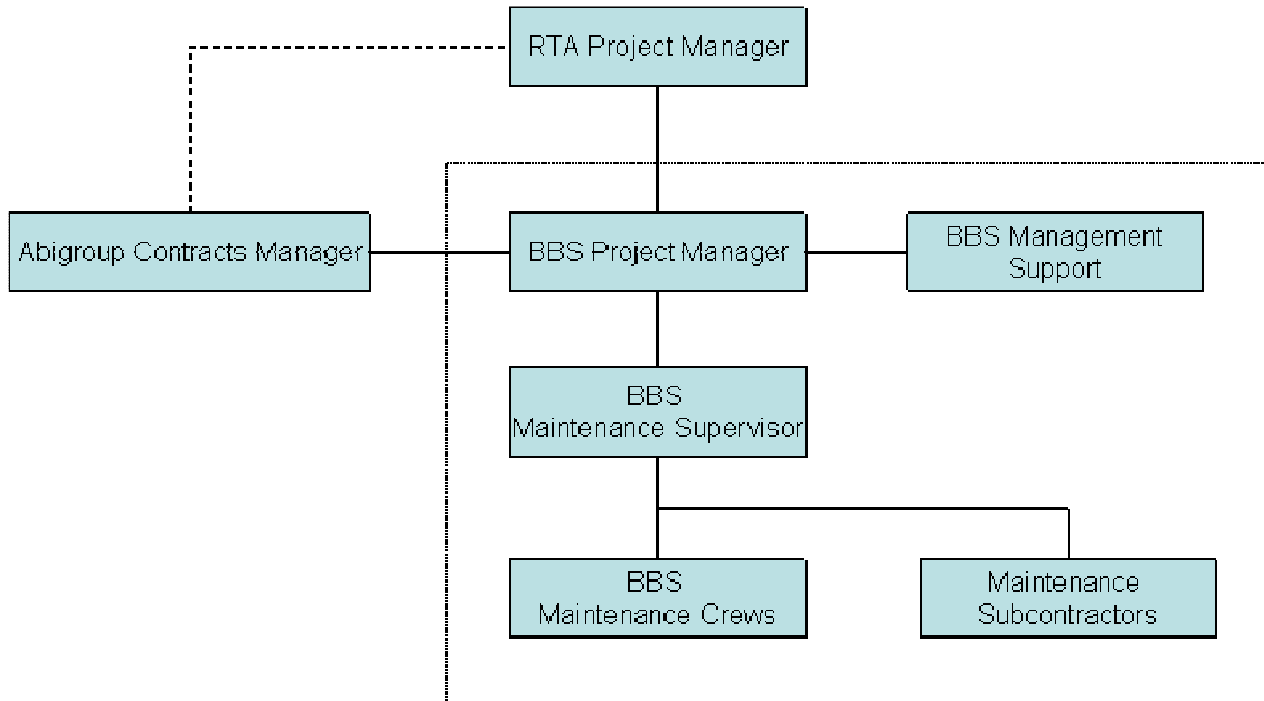
Local roads constructed during project works (Perrys Road, Mailmans Road, Overhead Bridge Road, Hunters Forest Road, Archville Station Road, East Bonville Road, Bonville Station Road, Williams Road, Reedys Road and Lyons Road) are all to be operated and maintained by Coffs Harbour City Council, Bellingen Shire Council and National Parks at the conclusion of construction and handover to CHCC, BSC and NP.

The maintenance work includes all tasks and things necessary to:

- maintain the Upgrade, including repair, refurbishment, upgrades and replacements as required, until the Date of Final Completion;
- maintain and operate lighting and pull-over bays;
- prepare, implement, update and improve the Maintenance Manuals;
- provide quality assurance of the Maintenance Work;
- ensure that the Maintenance Work is independently verified during the Maintenance Period;
- maintain an environmental management system including environmental monitoring up to the Date of Final Completion;
- mitigate environmental impacts during the Maintenance Period; and
- hand over the Upgrade to RTA at the end of the Maintenance Period in the specified condition.

The Project Maintenance Manager and Maintenance Supervisor will have a key role in ensuring that the requirements of the OEMP are met. An organisational chart of project personnel for the operational and maintenance phase of the Highway is provided in Figure 2.2 overleaf.

**Figure 2.2:** BBS Organisational Chart, Bonville Upgrade



**BBS Organisation Chart**

Details of project personnel are provided in Section 3 and Annexure R (Position Descriptions) of the Maintenance Manual, and below are environmental responsibilities.

The location of the maintenance office and compound is proposed for Bonville Station Road, Bonville (current compound location) and Archville Station Road (previous batch plant location).

**Table 3.1: Environmental Responsibilities**

<b>Operational Project Team Environmental Responsibilities</b>	
Title	Role, Responsibility and Authority
Project Maintenance Manager	<ul style="list-style-type: none"> <li>• oversee the implementation of environmental monitoring activities on site;</li> <li>• obtaining/maintaining environmental approvals/licences;</li> <li>• ensure that all key personnel are fully conversant with the OEMP and that activities are planned and conducted such that they comply with the environmental requirements;</li> <li>• identify the training needs of personnel and subcontractors, prepare training programs/activities and maintain training records;</li> <li>• prepare any further activity guidelines/Standard Operating Procedures for maintenance and monitoring activities;</li> <li>• establish and communicate environmental requirements for the planning, selection and management of subcontractors;</li> <li>• monitor and audit the work of subcontractors and consultants against contractual requirements;</li> <li>• liaise with landholders and the local community (where requested to);</li> <li>• review and report on the effectiveness of environmental controls and infrastructure;</li> <li>• periodically review the OEMP to assess its effectiveness and practicality;</li> <li>• collate, review and report on maintenance and monitoring outcomes;</li> <li>• in consultation with the Quality, Environmental and OHS Systems Manager decide whether new environmental procedures are required. Ensure that the corrective action and non-conformance process remains effective.</li> </ul>
Contracts Supervisor	<ul style="list-style-type: none"> <li>• receiving and resolving (where possible) complaints in consultation with the Maintenance Supervisor;</li> <li>• complaints can be directed to 0428 100 847.</li> </ul>
Maintenance Supervisor	<ul style="list-style-type: none"> <li>• maintain a high standard of quality control as required by the OEMP and Maintenance Manual;</li> <li>• ensure maintenance equipment is well maintained and calibrated and that</li> </ul>

Operational Project Team Environmental Responsibilities	
Title	Role, Responsibility and Authority
	<p>sufficient stocks of maintenance consumables are held;</p> <ul style="list-style-type: none"> <li>manage the efficient operation of all Spill Basins and Gross Pollutant Traps (GPT's) and inspect after significant rainfall events. Significant rainfall events would include flooding events, and rain events which results in more than 100mm of rain being received in any given day;</li> <li>provision of spill response kits and the correct storage of dangerous goods;</li> <li>attend all spillages or incidents and advise on response procedures and remedial/preventative action;</li> <li>liaising with the Contracts Supervisor in response to complaints;</li> <li>supervise repair and maintenance contracts and coordinate subcontractor work in accordance with this OEMP. Conduct familiarisation and training programs for subcontractor's personnel to be engaged;</li> <li>manage the "Excavation Permit" and/or "Road Closing Permit", and/or "Dial Before You Dig" permit as required, to ensure minimal disruption to services.</li> </ul>
BBS Management Support (Quality, Environmental and OHS Management Systems Manager)	<ul style="list-style-type: none"> <li>review the OEMP annually to assess its effectiveness and practicality;</li> <li>provide environmental advice when required;</li> <li>role in auditing of management systems and procedures;</li> <li>periodically inspect O&amp;M activities for compliance with activity guidelines;</li> <li>provide input into the preparation of activity guidelines;</li> <li>attend meetings as required.</li> </ul>
Maintenance Crews (incl. Maintenance Leading Hand)	<ul style="list-style-type: none"> <li>implement maintenance works as directed and in accordance with OEMP and agreed maintenance schedules and work procedures;</li> <li>be proactive in minimising the potential for environmental impact associated with maintenance activities;</li> <li>provide assistance during unforeseen incidents;</li> <li>provide feedback to superintendent and personnel on the effectiveness and practicality of maintenance methods and environmental controls;</li> <li>report to Maintenance Supervisor.</li> </ul>

The Maintenance Manager is responsible for providing the resources necessary to complete the required tasks in accordance with this OEMP.

Some specialised resources may be required to implement some components of the environmental monitoring and management program. A brief description of the

possible role of specialist consultants and their contact details are provided in the table below.

**Table 3.2: Environmental Consultants**

Position	Name	Contact	Role
Ecologist - Flora & Fauna	Andrew Benwell (flora)	(02) 6684 5496	<ul style="list-style-type: none"> <li>flora monitoring (threatened and significant species);</li> <li>advise on landscaping, plant maintenance and rehabilitation issues.</li> </ul>
	TBA (fauna)	(02) TBA	
Noise consultant	Bassetts – Tom Cocking (Acoustic Engineer)	(02) 8295 7555	<ul style="list-style-type: none"> <li>undertake noise monitoring and assessment activities as required by the Conditions of Approval and Operational Noise Management Plan;</li> <li>provide advice on noise mitigation and management issues.</li> </ul>
Heritage (Archaeologist)	Jacqui Collins	(02) 6559 9138 0427 599 137	Advice on heritage assessment.
Soil Conservation	Tim Elder	0439 608 532	Advice on soil conservation and erosion and sedimentation management.
Water quality laboratory	Coffs Harbour City Council Laboratory	(02) 6648	Water quality laboratory analysis – results for water quality sampling in particular.

Contact details for maintenance personnel will be provided to the RTA, and relevant agencies as required.

## 3.2 Induction and Training

### 3.2.1 Site Induction

All project personnel, subcontractors and consultants will be required to undertake a site induction which will, as a minimum, address the following environmental topics:

- the OEMP and consequences of non-compliance with the OEMP;
- location of significant environmental sensitive areas and protected vegetation;
- incident management procedures (eg the action to be taken in emergencies, communication lines and contact details for emergency services and site representatives).

A record will be kept of induction details and attendees in accordance with **Standard Operating Procedure SOP-A05**.

### **3.2.2 Environmental Training**

Section 12.10 of the Maintenance Manual provides a matrix for the training of maintenance personnel and sub-contractors.

In addition to the site induction, environmental training will be delivered in accordance with **Standard Operating Procedure SOP-A05**.

The following environmental training will be delivered for maintenance personnel and sub contractors specific to the work activity they will undertake:

- the location, identification and management of environmentally sensitive areas;
- purpose and content of relevant Standard Operating Procedures (refer Annexure K of the Maintenance Manual).

Records of training, competency and qualifications including dates, names and trainer details, will be kept and periodically reviewed in accordance with SOP-A05.

## **3.3 Communication and Consultation**

### **3.3.1 Reporting**

Reporting requirements for the maintenance phase is documented in Section 8 of the Maintenance Manual. The environmental component of the project report for the RTA will address:

- progress on the implementation of conditions of approval and project requirements (this is further detailed in Appendix 5 – OEMP checklists);
- details and outcomes of inspections, monitoring, maintenance and audits conducted on environmental infrastructure (eg fauna underpasses, landscaping and spill basins);
- performance of the work and suggestions for changes/improvements;
- environmental incidents;
- corrective actions;
- complaints, community comments/issues and feedback;

- licences, permits and approvals sought/received;
- protection of heritage items;
- revisions to maintenance plans.

The report will include performance against the requirements of the OEMP.

### 3.3.2 Government Agencies and the Community

This OEMP is to be developed in consultation with state agencies. On-going contact with state agencies and the community may be required at various times during the maintenance period. Examples include:

- notification to the RTA and DECC of a major spill or incident on the highway;
- notification to DPI (Fisheries) of works that may involve the removal of sediment or snags from a waterway;
- notification to Bellingen Shire Council or Coffs Harbour City Council of impending work, changes to road conditions or environmental incidents or emergencies;
- notification to the community of a proposed change to traffic conditions.

Contact details for the relevant government agencies is listed below in Table 3.3

**Table 3.3:** Environmental Agency and Emergency contact details

Agency	Name	Contact
RTA	Col Solomon	0411 280 068
DECC (EPA)	Scott Hunter	131555
DECC (NPWS)	Craig Harre / Damien Hofmeyer	131555
DECC (NPWS) Bongil Bongil National Park	Martin Smith	131555
DPI Fisheries	Max Enklaar	6626 1325

### 3.3.3 Complaints Register

A complaints and enquiry handling system will be implemented during the maintenance period and is documented in Section 8.8 of the Maintenance Manual. This will require the following records to be kept:

- Date, time and nature of the complaint or inquiry;
- Type of communication (telephone, letter, meeting etc);
- Name, address, contact number;
- Nature of complaint;
- Response details.

Details on complaint management plus the handling of media enquiries are provided in the Maintenance Manual.

Please note that complaints are to be directed to the Contracts Supervisor (0428 100 847) who is responsible for liaising with the Maintenance Supervisor (site based) in responding to any such complaints.

Operational noise (road traffic noise) complaints can be directed to 1800 725 321.

## **4 Environmental Aspects, Impacts and Risks**

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### **4.1 Risk Assessment**

The risk assessment process utilised is based on the Australian Standard, (AS/NZS 4360:2004) Risk Management, which utilises qualitative measures to estimate the consequence or impact of an event, along with the estimate of likelihood.

For each potential hazard, the strategy of examining the “consequence” prior to the “likelihood” was conducted to ensure the implications are not overlooked purely because a hazard is assessed as having a lower likelihood of occurrence. A simple assessment of L (Low), M (Medium) and H (High) was used for the assessment of consequence. For each potential hazard, the likelihood of the occurrence was noted. A simple assessment of L (Low), M (Medium) and H (High) was used for the assessment of likelihood of occurrence.

The following Risk Analysis Matrix was applied to assess the priority of the various hazards identified.

**Table 4.1:** Predicted Level of Risk

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
A (almost certain)	L	M	H	H	H
B (likely)	L	M	H	H	H
C (moderate)	L	M	H	H	H
D (unlikely)	L	L	L	M	H
E (rare)	L	L	L	M	M

*Adopted from the Australian Standard (AS/NZS 4360:2004), reference Annexure V of the Maintenance Manual.*

**Legend:**

H = High Risk

M = Moderate Risk

L = Low Risk

## 4.2 Environmental Impacts & Control Measures

A summary of the results of the risk management analysis along with the identification of environmental aspects and their subsequent environmental impacts, including mitigation strategies for all key risks, are provided in Table 4.2. The Maintenance Manager will regularly review the environmental risks associated with operational and maintenance activities and update systems accordingly.

The identification of environmental aspects and impacts is important to the selection of environmental safeguards and work methods for operational activities such as maintenance. The specific aspects and impacts of the maintenance activities required during the operation of the project have been identified in the following table.

**Table 4.2:** Aspects, Impacts and Controls associated with the Operational Phase

Environment System Element	Aspect	Impacts	Risk	Operational Mitigation/Control Measures	Monitoring and frequency
Noise and vibration	<ul style="list-style-type: none"> <li>Noise and vibration from the road</li> </ul>	<ul style="list-style-type: none"> <li>Impact on local sensitive receivers - exceedance of the relevant criteria.</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the ONMP</li> <li>Generally the maintenance works will be carried out to prevent noise nuisance and disturbance, refer to Section 7.1 of the Maintenance Manual.</li> <li>Maintenance of noise walls as part of the road asset &amp; infrastructure – refer to the Maintenance Manual (Code of Maintenance Standards) for more details.</li> <li>For noise monitoring procedures and consultation refer to OEMP Section 4.6, and to SOP- BBS-PC-BU-702 <i>Noise Monitoring</i>.</li> </ul>	

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Environment System Element	Aspect	Impacts	Risk	Operational Mitigation/Control Measures	Monitoring and frequency
Surface water	<ul style="list-style-type: none"> <li>Vehicle traffic over creek and River crossings</li> <li>Release of water from basins</li> <li>Removal of sediment and debris from pit, drain and culvert maintenance works</li> <li>Rectification of drain and batter scour</li> </ul>	<ul style="list-style-type: none"> <li>Increased sedimentation and turbidity of water bodies from dust generation caused by movement of vehicles on road</li> <li>Potential for oil/fuel leakages into waterways</li> <li>Degradation of water quality in watercourses</li> <li>Reduced capacity for the capture of polluted runoff</li> <li>Release of polluted water or contamination to the environment</li> <li>Disposal of sediment</li> <li>Blockage of streams</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> <li>High</li> <li>High</li> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the Soil and Water Management Plan</li> <li>When removing sediment from basins ensure that rain is not forecast.</li> <li>Ensure that any wastewaters located in the basin that require removal prior to maintenance are collected by water cart or the like and used either as a water source in dust suppression or the like. These wastewaters are not to be discharged to sensitive areas or to watercourses or places where they may enter a watercourse.</li> <li>Remove sediment / silts and limit disturbance.</li> <li>Ensure any silts are removed.</li> </ul>	
Flooding and hydrology	<ul style="list-style-type: none"> <li>Change to flood regime due to topographical changes and modification of catchments</li> </ul>	<ul style="list-style-type: none"> <li>Damage to property and environment</li> </ul>	<ul style="list-style-type: none"> <li>Med</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the Soil and Water Management Plan for monitoring and mitigation measures</li> </ul>	
Land slip/ Settlement/ Groundwater	<ul style="list-style-type: none"> <li>Changes to surface profile causing water ingress to soil</li> </ul>	<ul style="list-style-type: none"> <li>Impact on slope stability and groundwater levels</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the Soil and Water Management Plan</li> </ul>	

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Environment System Element	Aspect	Impacts	Risk	Operational Mitigation/Control Measures	Monitoring and frequency
Air quality	<ul style="list-style-type: none"> <li>Unprotected surfaces (eg from stockpiles and/or bare batters)</li> </ul>	<ul style="list-style-type: none"> <li>Dust generation</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Cover or stabilise stockpiles to prevent wind erosion</li> <li>Maintain landscape coverage</li> </ul>	<ul style="list-style-type: none"> <li>In accordance with Maintenance Manual and landscape maintenance</li> </ul>
Soil erosion and sedimentation	<ul style="list-style-type: none"> <li>Maintenance works that excavate soils</li> </ul>	<ul style="list-style-type: none"> <li>Sediment run off into local streams, water courses and block drainage infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the Soil and Water Management Plan for monitoring and mitigation measures</li> </ul>	
Access and traffic	<ul style="list-style-type: none"> <li>Temporary road works</li> </ul>	<ul style="list-style-type: none"> <li>Restricted access to motorists, pedestrians and cyclists</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance Supervisor to arrange appropriate signage, notification, and identification of alternative routes</li> </ul>	<ul style="list-style-type: none"> <li>Prior to temporary works commencing, and in accordance with Road Occupancy Licence</li> </ul>
Heritage and Archaeology	<ul style="list-style-type: none"> <li>Routine maintenance activity</li> </ul>	<ul style="list-style-type: none"> <li>Damage to heritage item</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Heritage Management Plan</li> </ul>	
	<ul style="list-style-type: none"> <li>Excavation of soils</li> </ul>	<ul style="list-style-type: none"> <li>Impacts to indigenous artefact materials</li> </ul>	<ul style="list-style-type: none"> <li>High</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Heritage Management Plan</li> </ul>	
Waste/ Resource Management/ Removal/ Disposal/ Recycling	<ul style="list-style-type: none"> <li>Waste management</li> </ul>	<ul style="list-style-type: none"> <li>Incorrect disposal of waste</li> <li>Inefficient resource use</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the Waste and Reuse Management Plan</li> </ul>	
Flora and Fauna/ Landscaping/ Visual screening	<ul style="list-style-type: none"> <li>Weed management activities</li> </ul>	<ul style="list-style-type: none"> <li>Inappropriate control of weeds leading to spread of weed;</li> </ul>	<ul style="list-style-type: none"> <li>High</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 4.4 of this OEMP and SOP BBS-PC-BU-701 <i>Weed Control</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Refer to OEMP Section 4.4 and SOP BBS-PC-BU-702 701.</li> </ul>
	<ul style="list-style-type: none"> <li>Maintenance of new plantings</li> </ul>	<ul style="list-style-type: none"> <li>Impact of weed management techniques on newly planted vegetation (kill through overspray), and on Threatened Species</li> </ul>	<ul style="list-style-type: none"> <li>Mode rate</li> </ul>		

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Environment System Element	Aspect	Impacts	Risk	Operational Mitigation/Control Measures	Monitoring and frequency
	<ul style="list-style-type: none"> <li>Vegetation control and removal of debris from waterways</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance activity disturbing the creek bed and aquatic vegetation</li> <li>Damage or instability to creek banks</li> <li>Damage to riparian vegetation</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to OEMP Section 4.5 and SOP BBS-PC-BU-713.</li> <li>Refer to OEMP Section 3.3 for communication to government agencies</li> </ul>	Refer to SOP BBS-PC-BU-713 <i>Maintenance at Waterways</i>
	<ul style="list-style-type: none"> <li>Management of batter drainage and/or fauna fence</li> </ul>	<ul style="list-style-type: none"> <li>Inadvertent damage to protected, threatened plant species</li> </ul>	<ul style="list-style-type: none"> <li>High</li> </ul>	<ul style="list-style-type: none"> <li>Refer to SOP BBS-PC-BU-713 <i>Maintenance at Waterways</i></li> </ul>	
Waste and wastewater	<ul style="list-style-type: none"> <li>Wash down and cleaning activities</li> </ul>	<ul style="list-style-type: none"> <li>Contaminated water</li> <li>Localised pollution</li> <li>Pollution of waterways</li> </ul>	<ul style="list-style-type: none"> <li>High</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the Soil and Water Management Plan</li> <li>Designated wash down areas including sediment control measures</li> <li>Collection and treatment of wash-down waters</li> <li>Collect and dispose of contaminated water at licensed facility</li> <li>Correct storage of cleaning products</li> </ul>	<ul style="list-style-type: none"> <li>Water pollution control measures managed in accordance with the Soil and Water Quality Management Plan</li> </ul>
	<ul style="list-style-type: none"> <li>Collection of roadside litter and waste from litter bins (e.g. rest areas) and traps</li> </ul>	<ul style="list-style-type: none"> <li>Pollution of the environment</li> <li>Off-site impacts (littering)</li> <li>Harm to fauna</li> <li>Incorrect disposal</li> <li>Disposal to landfill</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Waste and Reuse Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>Inspection of highway in accordance with Maintenance Manual and the Waste and Reuse Management Plan</li> </ul>

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Environment System Element	Aspect	Impacts	Risk	Operational Mitigation/Control Measures	Monitoring and frequency
Dangerous Goods /Hazardous Materials	<ul style="list-style-type: none"> <li>Collection of hazardous spill/ contaminated waste, major spills on motorway</li> <li>Activities requiring use of fuel</li> <li>Accidental spillage from fuel and chemical storage</li> </ul>	<ul style="list-style-type: none"> <li>Contamination of soil, surface water or groundwater and costly clean up and disposal costs</li> <li>Generation of waste</li> </ul>	<ul style="list-style-type: none"> <li>High</li> <li>High</li> <li>High</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance Supervisor to arrange provision of spill response kits, and correct storage of dangerous goods.</li> <li>Refer to Section 4.3 of the OEMP for Emergency Preparedness and Response.</li> <li>Refer to Waste and Reuse Management Plan and SOP BBS-PC-BU-703 inspection and maintenance of compounds and storage areas.</li> <li>Provision of spill response kits</li> <li>Correct storage and signage of dangerous goods</li> </ul>	<ul style="list-style-type: none"> <li>Water quality monitoring in accordance with the Soil and Water Quality Management Plan</li> <li>Inspection and maintenance of compounds/storage areas in accordance with SOP BBS-PC-BU-703.</li> </ul>
Energy Use	<ul style="list-style-type: none"> <li>Vehicle use on the Pacific Highway</li> </ul>	<ul style="list-style-type: none"> <li>Fuel consumption</li> </ul>	<ul style="list-style-type: none"> <li>Low</li> </ul>	<ul style="list-style-type: none"> <li>Substantial energy conservation is achieved by switching vehicle traffic onto the new Pacific Highway upgrade, which eliminates sub-standard curves, improves grades, reduces travel distances and uses concrete pavements.</li> </ul>	

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Environment System Element	Aspect	Impacts	Risk	Operational Mitigation/Control Measures	Monitoring and frequency
Utilities	<ul style="list-style-type: none"> <li>Excavation of Utility Services</li> </ul>	<ul style="list-style-type: none"> <li>Soil and vegetation disturbance causing               <ul style="list-style-type: none"> <li>Localised pollution (dust)</li> <li>Pollution of waterways due to soil erosion</li> <li>Damage to vegetation</li> </ul> </li> <li>Disruption to utility service</li> </ul>	<ul style="list-style-type: none"> <li>Med</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Soil and Water Management Plan</li> <li>Maintenance Supervisor manages an "Excavation Permit" and/or "Road Closing Permit" and/or "Dial before you dig" permit as required.</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Soil and Water Management Plan</li> </ul>

## **4.3 Emergency Preparedness and Response**

Emergency call out management is documented in Section 8.6 of the Maintenance Manual and the Standard Operating Procedure M2 (refer to Annexure K of the Maintenance Manual).

During the maintenance period, a range of preventative measures will be undertaken by the Maintenance Manager to reduce the risk of an incident occurring, including:

- inspections of areas considered to have an environmental pollution risk eg. storage areas and compounds, refer to SOP- BBS-PC-BU-703;
- regular monitoring and auditing of activities, work methods, management systems, personnel and subcontractors, refer to OEMP Section 5;
- completion of checklists and record sheets in a timely manner, refer to OEMP **Appendix 5**;
- the provision of inductions and training, refer to OEMP Section 3.2, and Section 12.10 of the Maintenance Manual;
- maintenance of stocks of emergency response equipment, refer to OEMP Section 4.3.1 below.

### **4.3.1 Incidents and Emergency Response**

An environmental incident may include a spillage or major leak, failure of a pollution control device such as a bund or basin, major settlement, collapse of bank or embankment, slip failure of cuts slopes or fill embankments, fire (eg loss of ground cover vegetation), damage to protected vegetation or animals on the highway.

Incident management is detailed in the Maintenance Manual in SOP-BBS-PC-602. The incident management will be also be carried out in accordance with the **Safety Management Plan and that relevant BBS procedure BBS-PC-602-“Incident Management”**, which is provided in the Safety Management Plan. More detailed environmental responses are provided in this section of the OEMP.

In order to be prepared for a potential chemical or fuel spill from a traffic accident on the highway, the Maintenance Manager will provide a set of drawings which show the location of the Water Quality Spill Basins to the local emergency services team leader at the commencement of the maintenance phase of the project. These basins DO NOT have valves. They will contain at least 20,000 litres within the basin. Refer to **SOP-BBS-PC-BU-706** for managing the basin after a spill or incident.

In summary when a spill occurs on the highway, the SOP states that:

1. Where chemicals or other pollutants have been captured in a basin following a spill or incident, the following procedure will be implemented under the direction of the RTA and/or DECC/EPA:
  - a. Inspect the basin to assess its integrity (e.g. identify any breach or leaks)
  - b. Determine the type and quantity of chemical or fuel contained in the basin. If it is a hydrocarbon spill, collection of the material will be through use of emergency spill response equipment to be kept at the main compound;
  - c. Provide or re-instate access to the basin;
  - d. If directed, arrange a suitable licensed contractor (licensed by the DECC/EPA) to remove and dispose of the chemical in the basin. Do not release the basin to the environment;
  - e. Arrange for the treatment or removal of contaminated soil and vegetation if any remains in the basin.

In the event of a chemical spill which is water soluble (ie it will mix within the water column), ensure that as much of the spill is contained as possible. Consider bunding / trapping as much of the spill as possible within drainage lines and within the basin. Suggested measures could include placing caps on the end of the overflow pipes to provide additional containment. Collection of this material will be through a licensed liquid waste transporter.

This information is to be recorded, including actions taken. Notification requirements may be triggered. Please refer to the notification section detailed below. Please always refer to the SOP and the details below.

The following framework supports the Safety Management Plan, for consideration of the Maintenance Manager and Supervisor:

***Define the problem***

- establish the details of the immediate problem to facilitate the identification of short term response options.

***Manage the situation***

- the safety of any person, either works or others involved, is the priority;
- minimise environmental damage as quickly as possible. In a spill situation, use sandbags, absorbent material, soil, an excavation or barrier to prevent the pollutant from reaching a watercourse;
- advise the RTA;
- advise DECC if the incident 'causes or threatens to cause material harm to the environment'. \*

- clean up the problem.

\* Pollution incidents causing or threatening material harm to the environment must be notified to DECC. A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur. Material harm to the environment includes on-site harm, as well as harm to the environment beyond the premises where the pollution incident occurred. An incident is considered to be notifiable to DECC if the actual or potential harm to the health or safety of human beings or ecosystems is not minor OR if actual or potential loss or property damage (including clean-up costs) associated with a pollution incident exceeds \$10,000.

### ***After the event***

- develop an action plan to prevent a similar incident occurring again;
- develop a rehabilitation plan to address any remaining environmental effects (if any). This would include the following contingencies:
  - i) contact the relevant government agencies (eg. DPI(Fisheries) and DECC) if the incident involves impact of sediment on a waterway or wetland;
  - ii) create an action plan in consultation with the relevant government agency;
  - iii) the action plan may involve the re-establishment of a permanent stabilised surface.
- restoring the controls;
- prepare a report on the incident.

Notification of major incidents or accidents for example, those involving a vehicle, truck rollover or loss of load (spillage) occurring as a result of the operation of the upgrade will be provided to the RTA by BBS , the community or key contacts, who will coordinate an emergency response involving external agencies. BBS maintenance personnel may be requested to assist with this response.

A list of key contacts, phone (business and after hours) will be maintained and displayed. This list is provided at the front of the Maintenance Manual.

Emergency response equipment including booms, absorbent material, MSDS sheets, spill kits, sandbags, sediment fence and flocculating agent, will be located at the maintenance compound. Personnel will be provided with training and basic instructions for use.

The content of emergency equipment stores will be checked by the Maintenance Supervisor on a 6 monthly basis.

A register of MSDS's will be kept at the maintenance compound and updated every 6 months and as new materials are brought to site to ensure that all chemicals and other materials have been identified.

An environmental incident is defined as an event which either resulted in, or could have resulted in, pollution of the environment. In accordance with the POEO Act 1997, it is an offence not to report incidents to the DECC actual or potential harm to the health or safety of human beings or ecosystems is not minor OR if actual or potential loss or property damage (including clean-up costs) associated with a pollution incident exceeds \$10,000.

All incidents will be investigated and the following details recorded:

- the cause and extent of the incident;
- corrective action identified and implemented;
- personnel responsible for implementing the corrective action;
- modification or new controls required to prevent the incident occurring again;
- changes in procedures or safeguards required;
- details of waste and contamination treatment and/or disposal.

As required by the Project Deed, immediate notification will be provided to the RTA (in writing) of any breach, potential breach, non-compliance or potential non-compliance with the conditions of approval, requirements of any of the environmental documents or relevant legislation.

## **4.4 Flora and Fauna Maintenance**

All maintenance works associated with the project will need to be aware that there are a range of environmentally sensitive areas adjacent to the project boundary. Sensitive sites along the project alignment include:-

- **Bongil Bongil National Park** – located adjacent to the project at both the southern and northern ends;
- **three threatened species translocation areas.** One of these is located within the project alignment. All translocation areas are detailed on the Sensitive Area Diagrams provided in **Appendix 1** and further information is provided below in section 4.4.1;
- **Pine Creek State Forest** – southern end of the project;
- two **SEPP 14 wetlands** downstream of the project
  - ❖ SEPP 14 No 344 is located 2km downstream of Reedys Creek Bridge;
  - ❖ SEPP 14 No 335 is located downstream at wetland 6 (chainage 98500);
- six endangered ecological communities (EEC's) within the route alignment;

- five **threatened fauna** species (osprey, koala, giant barred frog, grey-headed flying fox and Little bent-wing bat). The following provides a summary of locations where some of the threatened species have been identified:-
  - ❖ the Giant Barred Frog is known to occur in the Pine Creek area, particularly on the banks of Pine Creek within dense grass. It is critical that vegetation in this area is not disturbed;
  - ❖ koalas – occur throughout the entire project area, however there is a considerable population in the wildlife corridor area south of Pine Creek;
  - ❖ osprey – there is a nesting tree and killing tree located either side of the alignment just south of East Bonville Road bridge. These are identified on the Sensitive Area Diagrams.

Please refer to the Sensitive Area diagrams for the locations of all sensitive sites.

There is no entrance, access or works at all permitted within Bongil Bongil National Park. It is important that all maintenance staff are familiar with the location of the National Park and its boundaries. **In the unlikely event that entrance to the National Park may be required you must contact Martin Smith (NPWS Ranger) on 6652 0900 prior to entry.**

For flora and fauna maintenance, a number of Standard Operating Procedures have been developed as a guide, and described below.

#### **4.4.1 Monitoring Protected Flora**

There are numerous threatened plants which were translocated as part of the approved project. All have been identified, tagged and translocated by the Project Ecologist prior to the commencement of construction. The translocation sites have been regularly monitored during the course of the construction period.

There are three translocation sites – Translocation Area 1 (Reedy’s Track); Translocation Area 2 (Sth of Pine Creek) and Translocation Area 3 (Floyd’s grass site).

*Translocation Site 1* is located within the road reserve. This was transplanted in late October to November 2006.

*Translocation Site 2* is located in compensatory habitat, east of the alignment and south of Pine Creek. This compensatory habitat is designated for transfer to National Parks, and following this, access will not be permitted without the prior notification to NPWS. Refer to notification details above in Section 4.4. This was translocated in February 2008.

*Translocation Site 3* is located within Bongil Bongil National Park. There is to be no access to this site without prior notification to NPWS. Notification details for NPWS are provided above in Section 4.4. This was transplanted in late December 2006 to early January 2007.

These plants will be protected during the maintenance phase by:

- identifying the position of translocation sites on the Sensitive Area Plans;
- highlighting the presence of these in the site inductions to all project personnel and subcontractors;
- maintenance of the sites:-
  - ❖ for Site 1 and 2 - maintenance of the site is to occur annually for the first 3 years;
  - ❖ for Site 3 - maintenance of the site is to occur every 6 months for the first 3 years;
- monitoring and reporting on the health of the plants on an annual basis for five years following translocation (if required). Timing of monitoring is as follows: 3 months after finish of transplanting; 6 monthly for 2 years; 12 monthly for 3 years. The need for further monitoring will then be reviewed and a strategy developed for additional monitoring, if required. Later introductions of seedlings will be monitored when introduced, then at the intervals applying for transplants.

A Translocation Monitoring report will be prepared annually describing the results of the translocation project. The translocation monitoring report will provide:-

- a description of translocation methods;
- a description of monitoring methods;
- an analysis of monitoring data on a species by species basis;
- an assessment identifying causes of plant mortality;
- an accurate record of the plants transplanted and propagated;
- a description of the *ex situ* collection, including maintenance details;
- an assessment of the success or failure of the translocation based on the recommended criteria;
- an evaluation of the methodology and cost-effectiveness of the translocation strategy; and
- recommendations for future work including:
  - an assessment of whether to continue, repeat, revise, reschedule or discontinue the original strategy;

- options for on-going monitoring, maintenance and management of the translocation site; and
- timeframes and dates for tasks to be undertaken over the following twelve months.

The monitoring report will be provided to RTA. The RTA are to forward to any relevant state agency such as DECC.

#### **4.4.2 Landscape Maintenance and Weed Management Strategy**

The routine aspects of landscape maintenance such as intervention levels and maintenance standards are detailed in a separate document, the Landscape Maintenance Report which is part of the Maintenance Manual.

Slashing, mowing and weed control will not be undertaken in environmentally sensitive areas such as Bongil Bongil National Park. There is **no access at all allowed to Bongil Bongil National Park**.

Additionally, **no weed control is to occur within the translocation sites**, unless it is carried out by, or under the supervision of, the ecologist in accordance with the Translocation Plan.

An integrated weed management approach involving both non-herbicide and targeted herbicide controls will be used.

A hierarchy of weed control methods proposed are as follows, in order of preferred use:

- *reafforestation* – This preferred approach involves the establishment of a dense canopy of foliage of native trees/shrubs on the road batters and surrounding areas. The aim of reafforestation is to form a dense tree canopy that restricts sunlight penetration to weeds on the forest floor that provides long-term weed control. This is the goal of many of the landscape plantings on the project. Mature trees compete for moisture, nutrients and sunlight, therefore restricting potential weed establishment and growth;
- *cultivation, hand picking, and the provision of good clean mulch cover* are other methods of weed management to be adopted. This method may be used when weeds, such as vines overgrow and potentially impact Threatened Species. Care should be taken when removing weeds from protected vegetation;
- methods of *limited chemical application* of herbicide for the maintenance stage may include gas gun, granular, stem injection, cut stump, hand spray, foliar spray or wick wiper.

When herbicide is used on site, record the application details on **Standard Form SF-08 Pesticide Application Record**, referenced in an Annexure of the Maintenance Manual. Also refer to the **Standard Operating Procedures SOP- BBS-PC-BU-701** which includes the requirements of RTA Environmental Direction No 18 on this matter.

#### **4.4.3 Noxious Weeds**

Section 13 of the *Noxious Weeds Act 1993* requires the control of listed noxious weeds to the extent necessary to prevent the weeds from spreading to adjoining land.

The procedure for weed control is documented in **Standard Operating Procedure SOP-BBS-PC-BU-701**, listed in Appendix 7 of the OEMP.

The following table contains a list of the Noxious Weed species that have been identified on the project by the project ecologist.

**Table 4.3:-** List of Noxious Weeds in project area (Source: Biosis Research 1997)

Common Name	Scientific Name	Weed Category
Groundsel Bush	<i>Baccharis halimifolia</i>	3
Canna Lily	<i>Canna indica</i>	Env. weed
Camphor Laurel	<i>Cinnamomum camphora</i>	Env. Weed
Lantana	<i>Lantana camara</i>	5
Small-leafed Privet	<i>Ligustrum sinense</i>	4
Mickey Mouse plant	<i>Ochna serrulata</i>	Env. weed
Passionfruit	<i>Passiflora edulis</i>	Env. weed
Pine	<i>Pinus sp.</i>	-
Smooth Senna	<i>Senna X floribunda</i>	Env. weed
Setaria	<i>Setaria sphacelata</i>	-
Wild Tobacco	<i>Solanum mauritianum</i>	-
Wandering Jew	<i>Tradescantia albiflora</i>	-

Source ([www.dpi.nsw.gov.au/agriculture/noxweed/](http://www.dpi.nsw.gov.au/agriculture/noxweed/) and Benwell 2005).

More information on general weed management is available from the DPI website: <http://www.agric.nsw.gov.au/reader/weeds>

Guidance on control techniques for each of weed species identified is outlined in the Noxious and Environmental Weed Control Handbook 3<sup>rd</sup> Edition. Copies of this handbook can be downloaded for free from:

[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/123317/noxious-and-environmental-weed-control-handbook-3rd-edn.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/123317/noxious-and-environmental-weed-control-handbook-3rd-edn.pdf)

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A list of all noxious weeds for the Coffs Harbour / Bellingen Shire region is detailed in Table 3.4 below.

**Table 3.4:-** Noxious weeds in Coffs Harbour and Bellingen Shire Council area.

<b>Common Name</b>	<b>Botanical Name</b>	<b>Class</b>
African feathergrass	<i>Pennisetum macrourum</i>	5
African turnipweed	<i>Sisymbrium runcinatum</i>	5
African turnipweed	<i>Sisymbrium thellungii</i>	5
Alligator weed	<i>Alternanthera philoxeroides</i>	2
Anchored water hyacinth	<i>Eichhornia azurea</i>	1
Annual ragweed	<i>Ambrosia artemisiifolia</i>	5
Arrowhead	<i>Sagittaria montevidensis</i>	5
Artichoke thistle	<i>Cynara cardunculus</i>	5
Athel pine	<i>Tamarix aphylla</i>	5
Bathurst/Noogoora/Californian/cockle burrs	<i>Xanthium species</i>	4
Bear-skin fescue	<i>Festuca gautieri</i>	5
Bitou bush	<i>Chrysanthemoides monilifera subspecies rotundata</i>	4
Black knapweed	<i>Centaurea nigra</i>	1
Black willow	<i>Salix nigra</i>	3
Blackberry	<i>Rubus fruticosus aggregate species</i>	4
Boneseed	<i>Chrysanthemoides monilifera subspecies monilifera</i>	4
Bridal creeper	<i>Asparagus asparagoides</i>	5
Broad-leaf pepper tree	<i>Schinus terebinthifolius</i>	3
Broomrapes	<i>Orobanche species</i>	1
Burr ragweed	<i>Ambrosia confertiflora</i>	5
Cabomba	<i>Cabomba caroliniana</i>	5
Camphor laurel	<i>Cinnamomum camphora</i>	4
Cat's claw creeper	<i>Macfadyena unguis-cati</i>	4
Cayenne snakeweed	<i>Stachytarpheta cayennensis</i>	5
Chilean needle grass	<i>Nassella neesiana</i>	4
Chinese celtis	<i>Celtis sinensis</i>	3
Chinese tallow tree	<i>Triadica sebifera</i>	3
Chinese violet	<i>Asystasia gangetica subspecies micrantha</i>	1
Clockweed	<i>Gaura lindheimeri</i>	5
Cockle bur	<i>Xanthium species</i>	5
Columbus grass	<i>Sorghum x almum</i>	4
Corn sowthistle	<i>Sonchus arvensis</i>	5
Crofton weed	<i>Ageratina adenophora</i>	4
Dodder	<i>Cuscuta species</i>	5

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<b>Common Name</b>	<b>Botanical Name</b>	<b>Class</b>
East Indian hygrophila	<i>Hygrophila polysperma</i>	1
English broom	<i>Cytisus scoparius</i>	4
Espartillo	<i>Achnatherum brachychaetum</i>	5
Eurasian water milfoil	<i>Myriophyllum spicatum</i>	1
Fine-bristles bur grass	<i>Cenchrus brownii</i>	5
Fireweed	<i>Senecio madagascariensis</i>	4
Fountain grass	<i>Pennisetum setaceum</i>	5
Gallon's curse	<i>Cenchrus biflorus</i>	5
Giant Parramatta grass	<i>Sporobolus fertilis</i>	4
Giant rat's tail grass	<i>Sporobolus pyramidalis</i>	3
Glaucous starthistle	<i>Carthamus glaucus</i>	5
Golden thistle	<i>Scolymus hispanicus</i>	5
Gorse	<i>Ulex europaeus</i>	3
Green cestrum	<i>Cestrum parqui</i>	3
Groundsel bush	<i>Baccharis halimifolia</i>	3
Hackleberry, Celtis	<i>Celtis sinensis</i>	
Harrisia cactus	<i>Harrisia species</i>	4
Hawkweed	<i>Hieracium species</i>	1
Honey locust	<i>Gleditsia triacanthos</i>	3
Horsetail	<i>Equisetum species</i>	1
Hygrophila	<i>Hygrophila costata</i>	2
Hymenachne	<i>Hymenachne amplexicaulis</i>	1
Johnson grass	<i>Sorghum halepense</i>	4
Karoo thorn	<i>Acacia karroo</i>	1
Kochia	<i>Bassia scoparia</i>	1
Kudzu	<i>Pueraria lobata</i>	3
Lagarosiphon	<i>Lagarosiphon major</i>	1
Lantana	<i>Lantana species</i>	5
Leafy elodea	<i>Egeria densa</i>	5
Long-leaf willow primrose	<i>Ludwigia longifolia</i>	5
Mexican feather grass	<i>Nassella tenuissima</i>	1
Mexican poppy	<i>Argemone mexicana</i>	5
Miconia	<i>Miconia species</i>	1
Mimosa	<i>Mimosa pigra</i>	1
Mistflower	<i>Ageratina riparia</i>	4
Mossman River grass	<i>Cenchrus echinatus</i>	5
Mysore thorn	<i>Caesalpinia decapetala</i>	3
Nodding thistle	<i>Carduus nutans</i>	4

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<b>Common name</b>	<b>Botanical Name</b>	<b>Class</b>
Onion grass	<i>Romulea species</i>	5
Oxalis	<i>Oxalis species and varieties</i>	5
Pampas grass	<i>Cortaderia species</i>	4
Parthenium weed	<i>Parthenium hysterophorus</i>	1
Pond apple	<i>Annona glabra</i>	1
Prickly acacia	<i>Acacia nilotica</i>	1
Prickly pear	<a href="#">Opuntia species except O. ficus-indica</a>	4
Privet	<i>Narrow leaf/Chinese Ligustrum sinense</i>	4
Red rice	<i>Oryza rufipogon</i>	5
Rhus tree	<i>Toxicodendron succedaneum</i>	4
Rubbervine	<i>Cryptostegia grandiflora</i>	1
Sagittaria	<i>Sagittaria platyphylla</i>	5
Salvinia	<i>Salvinia molesta</i>	3
Sand oat	<i>Avena strigosa</i>	5
Scotch broom	<i>Cytisus scoparius</i>	4
Senegal tea plant	<i>Gymnocoronis spilanthoides</i>	1
Serrated tussock	<i>Nassella trichotoma</i>	4
Siam weed	<i>Chromolaena odorata</i>	1
Smooth-stemmed turnip	<i>Brassica barrelieri subspecies oxyrrhina</i>	5
Soldier thistle	<i>Picnomon acarna</i>	5
Spiny burrgrass	<i>Cenchrus longispinus</i>	4
Spotted knapweed	<i>Centaurea maculosa</i>	1
Texas blueweed	<i>Helianthus ciliaris</i>	5
Water caltrop	<i>Trapa species</i>	1
Water hyacinth	<i>Eichhornia crassipes</i>	3
Water lettuce	<i>Pistia stratiotes</i>	1
Water soldier	<i>Stratiotes aloides</i>	1
Willows	<i>Salix species</i>	5
Witchweed	<i>Striga species</i>	1
Yellow bells	<i>Tecoma stans</i>	3
Yellow burrhead	<i>Limnocharis flava</i>	1
Yellow nutsedge	<i>Cyperus esculentus</i>	5



Found only in Coffs Harbour City Council



Found only in Bellingen Shire Council

***Class 1 State Prohibited Weeds***

These are noxious weeds that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent.

These are noxious weeds which must be eradicated from the land and the land must be kept free of the plant. The weeds are also 'notifiable' and a range of restrictions on their sale and movement exists.

***Class 2 Regionally Prohibited Weeds***

These are noxious weeds that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent.

These are noxious weeds which must be eradicated from the land and the land must be kept free of the weed. The weeds are also 'notifiable' and a range of restrictions on their sale and movement exists.

***Class 3 Regionally Controlled Weeds***

These are noxious weeds which pose a serious threat to primary production or the environment of an area to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area.

These are noxious weeds which must be fully and continuously suppressed and destroyed.

***Class 4 Locally Controlled Weeds***

These are noxious weeds that pose a threat to primary production, the environment or human health, are widely distributed and are likely to spread in the area or to another area.

The growth and spread of these noxious weeds must be controlled according to the measures specified in a management plan published by the local control authority (Council).

***Class 5 Restricted Plants***

These are noxious weeds that are likely, by their sale or sale of their seeds or movement within the State or an area of the State, to spread either within or outside the State.

There are no requirements to control existing plants of Class 5 weeds, however the weeds are notifiable and a range of restrictions on their sale and movement exists.

#### **4.4.4 Fauna Underpasses**

Both RTA and BBS will be undertaking monitoring of fauna structures.

##### ***Koala Monitoring***

RTA, through Australian Museum Business Services (AMBS) will continue investigations of the impacts of roads on koalas and this will include koala monitoring up to 2 years post construction completion (commissioning). Monitoring methods will include, but not be limited to, the use of infra red cameras on the overpass and culvert underpass to assess usage of these structures.

In accordance with the SIS and other background documents, fauna passages which require monitoring for koala movement include the box culvert, Infra 2, Infra 3 (overpass), Infra 4 and Infra 13. These passages are to be monitored by RTA. The background documents also suggest that whilst this data is being collected for koalas, information of usage by native mammal species shall also be recorded.

##### ***Other native mammals***

The aim of this component is to determine if other mammals are using the fauna passages other than koalas and gliders. Two scenarios will occur:-

1. AMBS collects data at the box culvert, Infra 2, 3, 4 and 13 in relation to koala movement and BBS ecologist prepares a supplementary report of other native mammals based on this data obtained; and
2. BBS ecologist collects data and prepares report for the remaining fauna passages not required to be monitored by AMBS. These include Infra 5, Infra 6, Infra 8 and Infra 11.

As detailed above, for the passages monitored by AMBS a report will be prepared by the BBS ecologist. This report will be carried out using the data obtained by AMBS.

For each of the other fauna passages not monitored by AMBS, a combination of sand pads and hair tubes are to be used to monitor the use of the fauna passages. Each passage identified in Table 3.5 is to be assessed.

Sand pads will be 1m wide by 5cm deep and would be established across the entire width of the underpass, one at both ends and one at the centre of the underpass. A sandy loam would be used to ensure tracks are of high quality. Sand would be replenished as required.

Four hair tubes would be installed on each underpass and sampling would coincide with the sand pad monitoring. Hair tubes would be set on ground and on fauna furniture within each underpass. Hair tubes would be baited with honey, peanut butter and oats.

Sampling would be conducted over 3 months (Feb/Mar; Aug/Sept; Nov/Dec) with four seven day samples per month.

The terrestrial fauna underpass sites are listed in the following table.

**Table 3.5:** Fauna Passage Sites

Location (Chainage)	Structure	Function
<b>92.7</b> ( <b>Box culvert underpass</b> )	3 x 3m box culvert	Existing structure to be extended under new roadway. Proposed as dedicated koala underpass. Also incidental for amphibian, reptile and small mammal passage.
<b>93.5</b> PCSF (Infra 2)	Single span bridge	Incorporates 15m wide area for fauna passage underneath. Suitable for koala, amphibian, reptile and non-arboreal mammals.
<b>94.0</b> (Infra 3)	60m wide concrete overpass	Dedicated fauna overpass, 60m wide with highway traveling through twin tunnels. Overpass to be revegetated to facilitate fauna crossing. Suitable for all fauna groups, particularly koala and arboreal mammals.
<b>94.9</b> (Infra 4)	Bridge over Service Road	Bridge over Service Road to be widened to provide 10m strip for fauna crossing. Suitable for koala, amphibian, reptile and non-arboreal mammals. Service road traffic may result in road kills and disturbance, thus reducing effectiveness of underpass.
<b>96.2</b> (Infra 5)	Bridge over Pine Creek	Combined creek bridge and fauna underpass with bridge providing 15m wide areas on banks at normal creek flows for fauna movements. Suitable for all fauna groups except arboreal mammals.
<b>96.7</b> (Infra 6)	60m bridge over Reedy Creek	Combined creek bridge and fauna underpass with bridge providing areas on banks at normal creek flows for fauna movements. Suitable for all fauna groups except arboreal mammals.
<b>97.5</b> (Infra 8)	Single span bridge over gully	Fauna underpass. Dedicated single span bridge with 9m wide area for fauna movements. Suitable for all fauna groups except arboreal mammals.
<b>99.7</b> (Infra 11)	Bridge over Bonville Creek	Combined creek bridge and fauna underpass with bridge providing 15m wide areas on banks at normal creek flows for fauna movements. Suitable for all fauna groups except arboreal mammals.
<b>101.3</b> (Infra 13)	Bridge situated adjacent to Herdegen Close	Fauna underpass. Dedicated single span bridge with 9m wide area for fauna movements. Suitable for all fauna groups except arboreal mammals.

### ***Glider monitoring***

Monitoring will also include monitoring of retained median trees by gliders.

Survey timing is considered to be critical to the success of the monitoring. The ecologist has recommended that monitoring occurs during breeding season when young become independent and movement is at its greatest.

Monitoring for gliders is therefore to be carried out over two six week periods in both February / March and August/September. These times have been based on published information on breeding seasons and age of independence.

If available, infra red cameras are to be used on the overpass to monitor for gliders. If cameras are not available then the overpass would be monitored by spotlighting and hair tubes. If cameras can be deployed to the site (this will depend on the ability to relocate cameras from another site) the overpass would be monitored for two three month periods (Feb-Apr) and (Aug-Oct). Cameras would be installed on the rope bridge in February and checked at fortnightly intervals for one month. During each visit pictures would be downloaded, batteries changed and cameras checked.

If cameras are not available, monitoring will be through spotlighting and hair tube sampling which would occur in February and August. Hair tubes would be installed at various locations on the overpass including the rope bridge and would be inspected during camera inspection.

For the vegetated medians, glider monitoring would include a combination of spotlighting and hair tubes. This would occur at six sites, four medians and two reference sites. The reference sites are to be used to provide information on the presence of gliders in habitat adjoining the highway. Results in the median strip can be compared to the reference sites. Reference sites would be 50m from the road edge and median sites would be located in the middle of the retained vegetation. Ten hair tubes would be along each spotlight transect. Hair tubes would be set using an extension ladder and baited using peanut butter, honey and oats.

Spotlights transects would be sampled four times each of two six-week periods in Feb/Mar and Sept/Oct. Spotlight surveys would coincide with camera and hair tube monitoring.

### ***Osprey monitoring***

In accordance with CoC 16 one final round of osprey monitoring is to occur post construction completion (following commissioning). This is to occur during the breeding season (June to November) with a summary report forwarded to DECC.

#### **4.4.5 Fauna Exclusion Fences**

There will be regular inspections of the fauna exclusion fences to ensure their effectiveness. The inspection and maintenance regime is detailed in **Standard Operating Procedure SOP BBS-PC-BU-5015 Maintenance of Fencing and Gates** listed in Appendix 12.6 of the Maintenance Management Plan. The maintenance standard is set out in RTA DCM Specification R-11 *Fencing*, and Activity Guideline *AG3 Fauna Fencing Maintenance* in the Maintenance Management Plan.

#### **4.4.6 Injured Fauna**

If there has been an incident on the highway with an animal, refer to **Standard Operating Procedure M2 Incident Management**. If any shocked or injured fauna are found along the highway alignment they should be handled carefully.

Animal carers may be contacted to assist with animal care:

WIRES	Phone 0500 559 559
Coffs Harbour Vet	Phone (02) 6652 1566

Road kills along the length of the project alignment will be monitored and daily records kept by the Maintenance Manager. The procedure for monitoring of road kill is documented in **Standard Operating Procedure 708**, listed in Annexure of the Maintenance Manual.

For each fauna road kill record, the Maintenance Manager will investigate how each animal accessed the road and record this in the database. The data will be provided to RTA on a monthly basis (ref. SWTC Appendix 5, Section 5.4(j)), and will include number of animals, the type of species, indicative age class (ie. adult or juvenile), exact location and carriageway side.

### **4.5 Aquatic Habitat Management**

The **Standard Operating Procedure BBS-PC-BU-713 Maintenance at Waterways** includes procedures and protocols to remove debris, flood litter and accumulated sediment at creek and culverts, however such maintenance work must be undertaken avoiding disturbance of the creek bed and bank vegetation. Aquatic vegetation such as mangroves and SEPP14 areas are protected.

The maintenance of the main transverse culverts is of special interest because these have been designed as “fish passage”.

Designated fish passage watercourses include:-

- Bonville Creek;
- Reedy's Creek;
- Pine Creek;
- Wetland 3;
- Wetland 6;
- Wetland 7;
- Wetland 8;
- Infra 13.

Refer to **Standard Operating Procedure SOP-BBS-PC-BU-713** for fish passage sites and maintenance details. Refer also to **SOP-MS-B08** for *Maintenance of Fauna Structures* and inspections.

## **4.6 Operational Noise Management Maintenance**

In accordance with the Operational Noise Management Sub-Plan, noise monitoring shall commence at least two months after road opening and shall be conducted at selected representative locations along the Project route to give a minimum of seven days of data (excluding adverse weather days). Classified traffic monitoring shall be conducted simultaneously with the noise monitoring to identify traffic flows and mixes.

The details of the monitoring locations are documented in the *Operational Noise Management Plan* prepared for the project by Bassett Acoustics and included within the OEMP subplans.

The procedure for noise monitoring is documented in **Standard Operating Procedure 702**, listed in Appendix 7 of the OEMP.

Noise monitoring results shall be reviewed and the adequacy of the traffic noise mitigation measures shall be assessed in consultation with the RTA, DECC and Department of Planning.

## **4.7 Property Acquisitions and Adjustments**

All affected property has been or will be restored within 3 months of road opening. There will not be any further need for property acquisition, adjustments or establishment of alternative access arrangements following construction completion (commissioning).

## **5 Compliance and Evaluation of the OEMP**

### **5.1 Monitoring Checklists**

A checklist of commitments, obligations and actions required by the OEMP has been prepared and is provided in **Appendix 5**.

This monitoring checklist will be completed on a 6 monthly basis by the Maintenance Manager to ensure that the commitments contained in the OEMP have been met.

### **5.2 Monitoring, Inspection and Test Plans**

A maintenance inspection and monitoring schedule is included in an Annexure of the Maintenance Manual.

The timing, frequency, methodology, locations and responsibilities for environmental monitoring and inspections are specified in the respective OEMP Management Sub Plans and Standard Operating Procedures. The monitoring programs range from sample collection and analysis to those involving a more qualitative assessment. Refer to the action timing summarised in Table 5.1 below.

**Table 5.1:** A summary of Environmental Monitoring and Inspections

<b>Standard Operating Procedure</b>	<b>Element</b>	<b>Frequency</b>
SOP- BBS-PC-BU-711	Water quality monitoring	Monthly – first 6 months. Further monitoring will be undertaken in the event that exceedances are detected.
SOP-BBS-PC-BU-715	Groundwater monitoring	Will occur every 3 months for a 12 month period.
SOP- BBS-PC-BU-705	Monitoring threatened plants	Reporting annually for 3 years
SOP- BBS-PC-BU-703	Storage area inspections	Quarterly
SOP- BBS-PC-BU-706	Spill basins and constructed wetlands	Assessed annually and after spills
SOP- BBS-PC-BU-709	Fauna movement monitoring	Annually for 2 years by RTA
SOP- BBS-PC-BU-708	Road kill	Daily monitoring and reported monthly
SOP- BBS-PC-BU-702	Operational noise	Noise monitoring will commence at least 2 months following road opening
SOP- BBS-PC-BU-701	Weed inspection and report	Annually

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SOP- BBS-PC-BU-713	Maintenance assessments of waterways	Annually and after floods
SOP- BBS-PC-BU-714	Environmental inspections shall be undertaken for any maintenance works identified through the environmental risk assessment.	Annually
SOP-MS-B08	Inspections of fauna structures	Annually

All sampling strategies and protocols undertaken as part of the OEMP shall include a quality assurance/quality control plan in accordance with the overarching project Maintenance Manual.

The procedures for the collection of water samples will include:

- obtain 1 - 2 litre clean plastic bottles from the laboratory. One is required at least for each monitoring location;
- if analysis is to be obtained through use of a water quality meter for in-situ readings, staff carrying out this monitoring must be appropriately trained in the use of this equipment. Such training includes either being a qualified environmental scientist / engineer or having undertaken training with a qualified environmental scientist / engineer so that they are aware of how to appropriately use this equipment;
- analysis of TSS must always be carried out at a NATA accredited laboratory;
- samples are to be collected in the sample locations identified on the Sensitive Area Plans in Appendix 1;
- for creek waters take sample at 10-20 cm depth and away from the bottom and sides. Sample must be representative of the waters within the creek;
- fill bottles to overflowing then cap to ensure minimal air is present;
- fresh samples are preferred, supplied to the laboratory the same day of collection. Immediately following collection the samples should be maintained in a cool condition, out of direct sunlight;
- for overnight transport esky packaging and ice bricks are required.

Only NATA accredited laboratories shall be used for laboratory analysis.

Compliance inspections will also be undertaken to ensure that maintenance and monitoring activities comply with:

- the OEMP and sub plans;
- the Maintenance Manual - Standard Operating Procedures;
- approval and regulatory requirements.

Inspections and environmental audits will be documented, followed up and closed out in accordance with the Standard Operating Procedures and OEMP checklists provided in Appendix 5. Corrective action requests will be implemented and reviewed to prevent any reoccurrence of a non-conformance.

### **5.3 Non-conformance Procedures**

Environmental Incident Report (EIR) forms and Environmental Improvement Notices (EIN) will be completed by the Maintenance Manager for any environmental incident or non-compliance.

Corrective Actions following an environmental incident will be determined by the Maintenance Manager and will be dependant upon and appropriate to the nature and extent of the environmental incident. However key actions will include nominating someone responsible for taking preventative action to eliminate the possibility of a similar incident occurring again.

### **5.4 Sub-Contractor’s Environmental Management**

Major sub-contractors, such as those that undertake repairs or replacement of asphalt or concrete pavement, will be required to prepare and submit their own Environmental Management Plan.

These sub-contractor Environmental Management Plans will document their own environmental control procedures and standard operating procedures, and be submitted to the Maintenance Manager for approval.

### **5.5 Post Commissioning Environmental Assessment**

#### **5.5.1 Prior to the date of Construction Completion (Commissioning)**

An environmental compliance audit, including site inspection and full review of environmental records, will be carried out prior to the date of Construction Completion (commissioning). The audit would identify any environmental protection measures which have not yet been finalised. The condition of environmental protection controls shall be recorded and controls which need ongoing management will be itemised.

The audit report is required to be submitted to the RTA’s representative together with a written response on how all actions and issues raised in the audit will be addressed.

### **5.5.2 Twelve Months after Construction Completion (Commissioning)**

After construction completion (commissioning), an assessment shall be made on the key impact predictions made in the EIS and supported by supplementary studies. The assessment will detail the extent to which actual impacts reflect the predictions. Refer to Ministers CoA 16 (detailed in **Appendix 2**).

An Environmental Assessment Impact Report (EIAR) shall provide details on actual versus predicted noise and vibration impacts on local residences and nearby buildings, flora and fauna mitigation measures, geotechnical issues (including land slip) and all other key impact issues identified in the EIS including consultation with the community. The suitability of implemented mitigation measures and safeguards shall also be assessed. The report shall also assess compliance with the OEMP to date.

The EIAR is due twelve months after commissioning of the project, and will be provided to the RTA. The RTA are to forward this report to the Director-General of DoP, and any other relevant state agency and will be made publicly available.

### **5.5.3 Operational audits**

An Operational Audit must be carried out within 28 days after the end of the financial year in accordance with the requirements of G39 Section 4.14.3 (Appendix 4). A report of this audit must be provided to the RTA within 1 month of the date of the audit.

## **6 OEMP Review and Improvement**

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The OEMP and sub plans will be reviewed after the first twelve months of the maintenance contract to ensure that it adequately addresses the identified issues and the activities being undertaken during the operation of the upgrade. Follow up reviews will take place each 2 or 3 years after that.

The review will be initiated by the Maintenance Manager and will consider as a minimum:

- client's comments;
- audit findings;
- environmental monitoring outcomes;
- incidents and non-conformances;

- changes in organisational structure and responsibilities;
- changes in standards and legislation.

The Maintenance Manager will document and inform RTA of the review. Between reviews the Maintenance Manager will have the authority to make changes or additions to the system by way of an addendum for example, to meet the particular requirements of the client or reflect a change in work method arising from a non-conformance. Any feedback from the state government agencies may also be taken into consideration in the review.

Any revisions of the OEMP will be provided to RTA so that RTA can forward any such revisions to DoP.

## **7 Records Management Procedures**

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The Maintenance Manager will be responsible for the management of environmental records including the resources and training to maintain the following:

- the OEMP;
- monitoring data (water quality, noise, flora, fauna, road kills);
- inspection reports (internal and external);
- maintenance activity details;
- checklists;
- induction and training details;
- EIRs and EINs;
- complaints/comments register;
- audit reports and follow up (internal and external);
- subcontractor monitoring;
- waste management records (quantity, disposal location etc) ;
- meeting minutes;
- monitoring environmental planning obligations;
- correspondence.

Records will be held for at least ten years and will be accessible to the RTA's Representative and to authorised DECC and Council officers. Records will be managed in accordance with the Maintenance Manual SOP-M07.

## **8 Standard Operating Procedures**

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The following list of standard environmental operating procedures for specific activities are listed in the Maintenance Manual:

<b>SOP</b>	BBS-PC-BU-701	Weed Control
<b>SOP</b>	BBS-PC-BU-702	Noise Monitoring
<b>SOP</b>	BBS-PC-BU-703	Environmental Management of Storage areas
<b>SOP</b>	BBS-PC-BU-705	Monitoring Threatened plants
<b>SOP</b>	BBS-PC-BU-706	Management of Spill Basins
<b>SOP</b>	BBS-PC-BU-708	Monitoring of Road Kill
<b>SOP</b>	BBS-PC-BU-709	Monitoring of Fauna Structures
<b>SOP</b>	BBS-PC-BU-711	Water Quality Monitoring
<b>SOP</b>	BBS-PC-BU-712	Management of Acid Sulfate Soils
<b>SOP</b>	BBS-PC-BU-713	Maintenance at Waterways
<b>SOP</b>	BBS-PC-BU-714	Environmental Risk Assessment
<b>SOP</b>	BBS-PC-BU-715	Groundwater

## **9 OEMP Supporting Documents**

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Appendix 1 – Sensitive Area Plans

Appendix 2 – Planning Conditions of Approval relevant to the Maintenance Period

Appendix 3 – List of Environmental Legislation

Appendix 4 – Summary of Deed Environmental Document Requirements for  
Maintenance

Appendix 5 – The EMP Checklist

Appendix 6 – Environmental Improvement Notice and Environmental Incident Report  
and Investigation Forms

Appendix 7 – Standard Operating Procedures (Environmental)

### **Environmental Management Subplans**

SOIL AND WATER MANAGEMENT SUB PLAN (SWMP)

OPERATIONAL NOISE MANAGEMENT PLAN (ONMP)

HERITAGE MANAGEMENT SUB PLAN (HMP)

WASTE AND REUSE MANAGEMENT SUBPLAN (WRMP)

## **Appendix 1 Sensitive Area Plans**

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## **Appendix 2 MCoA relevant to the Operational Phase**

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## Conditions of Approval and Concurrence Conditions relevant to the Operational Period

### Department of Planning CoA

Condition	Issue	Addressed	Timing
MCoA 8	Notify to DG commencement of operation	The Proponent shall notify the Director-General and all relevant authorities in writing of the project commencement both in terms of construction and operation (ie commissioning).	Pre-Op
MCoA 15	Develop an OEMP	<p>An Environmental Management Plan (EMP) (Operation Stage) shall be prepared prior to the commencement of operation.</p> <p>The Plan shall be prepared in accordance with the conditions of this approval, all relevant Acts and Regulations and accepted best practice management procedures.</p> <p>The EMP (Operation Stage) shall address at least the following issues:</p> <ul style="list-style-type: none"> <li>(vii) identification of the statutory and other obligations which the Proponent is required to fulfil, including all licences/approvals and consultations/agreements required from authorities and other stakeholders, and key legislation and policies which control the Proponent's operation of the project;</li> <li>(viii) sampling strategies and protocols to ensure the quality of the monitoring programme, including specific requirements of the EPA and DLWC;</li> <li>(ix) monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental performance of the project during its operation, including description of potential site impacts, performance criteria, specific tests and monitoring requirements, protocols (eg. frequency and location) and procedures to follow;</li> <li>(x) steps the Proponent intends to take to ensure compliance with all plans and procedures;</li> <li>(xi) consultation requirements, including relevant government agencies, the local community and Council, and complaints handling procedures; and</li> <li>(xii) strategies for the main environmental system elements and including but not limited to: noise and vibration; water; land slip/settlement; air quality; erosion and sedimentation; access and traffic; property acquisition and/or adjustments; heritage and archaeology; groundwater; contaminated spoil; waste/resource management/removal/disposal; flora and fauna; hydrology and flooding; visual screening, landscaping and rehabilitation; hazards and risks; energy use, resource use and recycling; and utilities.</li> </ul> <p>Specific requirements for some of the main environmental system elements referred to in (iv) shall be as detailed under the conditions of this approval and/or as required under any licence or approval.</p> <p>The Plan shall be prepared in consultation with the EPA, DLWC, NSW Fisheries, NPWS and Coffs Harbour City Council and any other relevant government agency nominated by the Director-General.</p> <p>The EMP (Operation Stage) shall require approval by the Director-General prior to commissioning or within such time as otherwise agreed to by the Director-General.</p> <p>The EMP shall be certified as being in accordance with the conditions of approval by the EMR prior to seeking</p>	Pre-Op

## Department of Planning CoA

Condition	Issue	Addressed	Timing
		<p>approval of the Director-General.</p> <p>The EMP (Operation Stage) shall be made publicly available.</p> <p>All sampling strategies and protocols undertaken as part of the EMP (Operation Stage) shall include a quality assurance/quality control plan and shall be approved by the relevant regulatory agencies to ensure the effectiveness and quality of the monitoring programme. Only accredited laboratories can be used for laboratory analysis.</p>	
MCoA 16	EIAR	<p>An Environmental Impact Audit Report shall be submitted to the Director-General, and the EPA, and upon request by the Director-General, to any other relevant government authority 12 months after commissioning of the project, or unless otherwise agreed by the Director-General, and at any additional periods thereafter as the Director-General may require.</p> <p>The Report shall assess the key impact predictions made in the EIS and any supplementary studies and detail the extent to which actual impacts reflect the predictions. In particular, the Report shall provide details on actual versus predicted noise and vibration impacts on local residences and nearby buildings, flora and fauna mitigation measures, geotechnical issues (including land slip) and all other key impact issues identified in the EIS. The suitability of implemented mitigation measures and safeguards shall also be assessed. The Report shall also assess compliance with the EMP (Operation Stage).</p> <p>The Proponent shall comply with all reasonable requirements of the Director-General with respect to any reasonable measure arising from, or recommendations in, the report.</p> <p>The technical studies required as part of the report shall be prepared by appropriately qualified, independent specialists.</p> <p>The Report shall discuss results of consultation with the local community in terms of feedback/complaints on the construction and operation phases of the project and any issues of concern raised. The report shall be made publicly available.</p>	12 months after commissioning
MCoA 17	Soil and Water Quality Subplan	<p>As part of the EMP(s) (Construction Stage) and (Operation Stage), a detailed Soil and Water Quality Management Sub-Plan shall be prepared.</p> <p>The Sub-plan(s) shall be prepared prior to construction or operation as appropriate and provide details of pollution control measures, including measures to treat and dispose of water from the site, and water quality monitoring to be undertaken during the construction and operation stages respectively.</p> <p>The Soil and Water Quality Management Sub-Plan shall be prepared to the satisfaction of the DLWC and in consultation with the EPA, sufficient to address the technical requirements for obtaining relevant EPA licences.</p> <p>The Proponent should also consult with NSW Fisheries and Coffs Harbour City Council. NPWS shall be consulted in relation to specific water quality control measures to be implemented in the vicinity of wetland areas.</p> <p>The [Soil and Water Quality Management] Sub-plan shall be prepared in accordance with the Department of Housing's guideline Managing Urban Stormwater - Soils and Construction, 1998 and where appropriate DLWC's Constructed Wetlands Manual.</p>	<p>Pre-Op</p> <p>Pre-Op</p> <p>Pre-Op</p>
MCoA 18		<p>The Soil and Water Management Sub-Plan shall incorporate detailed erosion and sedimentation controls and site rehabilitation requirements which shall be prepared and submitted to the satisfaction of DLWC and in</p>	Pre-Op



## Department of Planning CoA

Condition	Issue	Addressed	Timing
		the EPA. Notwithstanding the above, the Proponent shall ensure compliance with the noise assessment criteria as described in the EIS unless otherwise agreed by the EPA as part of the NVMP.	
MCoA 34	Must comply with Section 11 of the Concurrence Report	The Proponent shall implement the conditions contained in Section 11 of 'Concurrence Report for the Proposed Pacific Highway Upgrade from Mailman's Track to Lyons Road, Bonville' (NPWS, 1999) unless otherwise agreed by the NPWS.	Op
	Weed management	Measures to control invasion of weeds during operation of the proposal, including aquatic weed species, shall also be addressed.	Op
MCoA 47	Any landscaping undertaken outside of the road reserve shall be monitored for at least 3 years	All landscaping works undertaken outside the road reserve shall be monitored and maintained by a suitably qualified landscape specialist for a period of not less than three years from commissioning of the road unless otherwise agreed with relevant landowners. All costs of such monitoring and maintenance shall be borne by the Proponent.	Op
		Landscaped areas within the road reserve shall be maintained at all times.	Op
MCoA 51	Non-indigenous Heritage Sub Plan	As part of the EMP(s) (Construction Stage) and (Operation Stage) (as applicable), the Proponent shall prepare a Non-Indigenous Heritage Management Sub-plan. The Sub-plan shall identify heritage items and present management options.  In the preparation of the [Non-Indigenous Heritage Management] Sub-plan, the Proponent shall consult with any local historical societies, relevant Heritage authorities and Coffs Harbour City Council.	Pre-Op
MCoA 58	Road dilapidation report	A road dilapidation report shall be prepared for all non-arterial roads likely to be used by construction traffic prior to commencement of construction and after construction is complete. Copies of the report shall be provided to all relevant Councils. Any damage aside from that resulting from normal wear and tear shall be repaired at the cost of the Proponent.	After commissioning
MCoA 62	Waste Management Subplan	As part of the EMP(s) (Construction Stage) and (Operation Stage) as relevant, a detailed Waste Management and Reuse Sub-plan shall be prepared.  The Sub-plan shall address the management of wastes during the construction and operation stages respectively. It shall be prepared prior to construction, and shall identify requirements for: <ul style="list-style-type: none"> <li>i) waste avoidance;</li> <li>ii) reduction;</li> <li>iii) reuse; and</li> <li>iv) recycling,</li> </ul> and details of requirements for:	Pre-Op

**Department of Planning CoA**

Condition	Issue	Addressed	Timing
		i) handling; ii) stockpiling; iii) disposal of wastes: specifically contaminated soil or water, concrete, demolition material, cleared vegetation, oils, grease, lubricants, sanitary wastes, timber, glass, metal, etc.; and iv) identifying any site for final disposal of any material and any remedial works required at the disposal site before accepting the material.	
		The Waste Management and Reuse Sub-plan shall be prepared in consultation with the EPA.  Any waste material that is unable to be reused, reprocessed or recycled shall be disposed at a landfill licensed by the EPA to receive that type of waste.	

**DECC (NPWS) Concurrence Conditions**

Condition	Issue	Addressed
Condition of Concurrence 9	Weed Management	The RTA is to prepare a Weed Management Strategy (WMS), which addresses weed management during construction and the on-going operation of the road. The WMS will form a part of the EMP and will identify the significance and prioritise areas along the route for weed control and management as well as identify the relevant weed species, and appropriate removal and disposal methods for the collection and destruction of all weed material.  No works are to commence in areas adjacent to lands in NPWS estate identified as additions to Bongil Bongil National Park until the Manager Northern Zone has reviewed and provided comment on the WMS.
Condition of Concurrence 16	Osprey Monitoring	Subject to land owner approval, the RTA is to undertake an assessment of the long-term security of the Osprey nest tree, including consideration of the following: <ul style="list-style-type: none"> <li>• The location of large living or dead trees in the vicinity that may represent potential recruitment (replacement) nest trees should the recorded nest tree be destroyed or cease to be suitable; and</li> <li>• The feasibility of the RTA providing, in consultation with the NPWS, an artificial pole nest structure in the event that the long term security of the nest tree cannot be guaranteed and/or suitable recruitment trees are not identified within the immediate vicinity.</li> </ul> The assessment of impacts on the Osprey must also include monitoring of breeding activity at the nest or replacement pole for breeding seasons during construction and one breeding season post construction. An annual report on breeding success is to be provided to the Manager Northern Zone.

## Other conditions

Condition	Issue	Addressed	Timing
Rep Reports	Noise monitoring	A post construction noise monitoring program would be undertaken.	
Rep Reports <b>RTA responsibility</b>	Fauna monitoring	<p>The Koala monitoring study would run for a total of six years, including 2 years pre-construction, 2 years during construction and 2 years post-construction. As such, Koala behaviour and movement patterns would be monitored during baseline conditions (i.e. existing Pacific Highways at Bonville and Yelgun - Chinderah) as well as during periods subject to construction and operational impacts.</p> <p>Briefly, the researchers selected for the (Koala monitoring) study will:</p> <ul style="list-style-type: none"> <li>· Review existing information;</li> <li>· Determine appropriate sites for research and monitoring;</li> <li>· Determine Koala behaviour and habitat requirements in the study areas;</li> <li>· Determine the relative effectiveness of selected mitigation structures; and</li> <li>· Provide a final report.</li> </ul> <p>The Consultant is expected to undertake original research and to use a variety of assessment techniques. Several of these methods are non-selective and would allow collection of data on species other than Koalas.</p>	
Rep Reports <b>RTA responsibility</b>	Fauna monitoring	<p>With respect to the Bonville area, it is recommended that particular emphasis be placed on monitoring the following for Koalas:</p> <ul style="list-style-type: none"> <li>· Use of the fauna overpass;</li> <li>· Use of the underpass located approximately 400 m from the overpass. Of particular interest is the differential use of the two corridor structures over the same monitoring period;</li> <li>· Use of the shared underpass in PCSF;</li> <li>· Use of the extended culvert in PCSF near the Raleigh deviation;</li> <li>· Use of the major fauna underpass north of Herdegen Close; and</li> <li>· The effectiveness of fauna-exclusion fencing in reducing or eliminating road kills.</li> </ul>	
Rep Reports	Fauna Monitoring	Two major mitigation measures, the fauna overpass and the median strip, are aimed at providing a movement corridor for gliders. This group should therefore be targeted as part of a separate study to monitor the effectiveness of these measures in facilitating gene flow across the highway.	
Rep Reports	Underpass monitoring	Wildlife Underpasses monitoring would include monitoring of any bridged underpasses, recording of road kills within or near the underpass and of ground-dwelling fauna using the underpasses.	
Rep Reports <b>RTA responsibility</b>		Data for other mammal species could also be recorded as part of the Koala monitoring program. These could be easily identified and recorded during spotlight and sand bed surveys. As for gliders, the RTA could consider commissioning a researcher to analyse additional data.	
Rep Reports		Monitoring of the koala population within the study area will be undertaken with particular interest in their	

## Other conditions

Condition	Issue	Addressed	Timing
<b>RTA responsibility</b>			movements. This would begin two years before the construction of the proposal, continue throughout the construction period and then run for the first two years of operation of the new route.
Rep Reports	Water quality monitoring		A water quality monitoring programme would be implemented to verify the effectiveness of control measures according to a baseline established by this EIS and subsequent pre-construction monitoring, as well as EPA and DLWC licence conditions. This programme would extend into post-construction phase of the bypass to ensure that water quality goals are being met.
Rep Reports	Prepare OEMP		An EMP would be required to be prepared for the operation of the highway and to co-ordinate ongoing monitoring and maintenance.
Rep Reports	Maintenance		Routine maintenance and correction of damage to barriers, signage, kerbing, drainage structures, bridges, acoustic fences and landscaping would occur over the life of the project.

## **Appendix 3 Legal and Regulatory Requirements**

## NSW Environmental Legislation

Legislation (NSW)	Requirements
<p><i>Environmental Planning and Assessment Act 1979</i></p> <p><i>Environmental Planning and Assessment Regulation 2000</i></p>	<p>This Act institutes a system for environmental planning and assessment including approvals and environmental impact assessment for proposed developments.</p>
<p><i>Fisheries Management Act 1995</i></p> <p><i>Fisheries Management Regulation 2002</i></p>	<p>The major objective of this Act is to conserve, develop and share the fishery resources of the state for the benefit of present and future generations. This includes conservation of aquatic biodiversity, threatened species, populations, ecological communities and critical habitats of fish and marine vegetation. NSW Fisheries must be contacted before any dredging activity is undertaken to remove obstructions from waterways.</p> <p>A permit from DPI (Fisheries) may be required for the removal of sediment or obstructions from a waterway, impacts on a creek or river bank, temporary or permanent blockage of fish passage, or disturbance to mangroves or marine grasses.</p>
<p><i>National Parks &amp; Wildlife Act 1974</i></p> <p><i>National Parks &amp; Wildlife Regulation 2002</i></p>	<p>This Act relates to the protection of fauna, native plants, and Aboriginal sites and relics.</p> <p>A permit may be required to damage an aboriginal relic.</p>
<p><i>Threatened Species Conservation Act 1995</i></p> <p><i>Threatened Species Conservation Regulation 2002</i></p>	<p>This Act regulates the protection of threatened flora and fauna as listed in the Schedules to the Act as either endangered or vulnerable.</p> <p>A licence may be required from DECC for the trimming or impacting in any way of a threatened flora species.</p>
<p><i>Waste Avoidance and Resource Recovery Act 2001</i></p>	<p>This Act relates to the management and reduction of waste including the consumption of natural resources and final disposal of wastes. It also ensures environmentally responsible transporting, reprocessing and handling of wastes.</p>
<p><i>Rivers and Foreshores Improvement Act 1948</i></p>	<p>This Act relates to the prevention of erosion of land by waters and controls activities within 40 metres of rivers, lakes and foreshores. Public authorities including the RTA, are exempt from requiring a permit under this Act.</p>
<p><i>Noxious Weeds Act 1993</i></p> <p><i>Noxious Weeds Regulation 2003</i></p>	<p>This Act provides for a coordinated approach to the control of weeds in NSW. The Act requires private occupiers, public authorities, corporations and local Councils to control noxious weeds on land under their management. It also empowers local Councils to give notice to undertake appropriate control according to the specified category.</p>

<p><i>Rural Fires Act 1997</i> <i>Rural Fires Regulation 2002</i></p>	<p>The object of this Act is to prevent, mitigate and suppress bush and other fires. The Act establishes a duty to prevent the occurrence of bush fires and to minimise the danger of spread of bush fires.</p>
<p><i>Pesticides Act 1999</i> <i>Pesticides Regulation 1995</i></p>	<p>The major objectives of this Act are to promote the protection of human health, the environment, property and trade in relation to the use of pesticides, having regard to the principles of ecologically sustainable development within the meaning of the <i>Protection of the Environment Administration Act 1991</i> and to minimise risks to human health, the environment, property and trade. The Act included provisions for recording details of herbicide use.</p>
<p><i>Protection of the Environment Operations Act 1997</i> <i>Protection of the Environment (General) Regulation 1998</i></p>	<p>This Act relates to the prevention, minimisation and abatement of pollution of waters, noise and vibration impacts, air pollution from all premises/mobile industries, plants, motor vehicles, and the disposal of waste to land. The Act applies to activities such as noise and air emissions, control of runoff, management of materials (e.g. fuel, chemicals, wastes) and the quality of effluent discharged.</p> <p>The PoEO Act replaced the <i>Clean Air Act 1961</i>, the <i>Clean Waters Act 1970</i>, the <i>Environmental Offences and Penalties Act 1989</i>, the <i>Noise Control Act 1975</i>, the <i>Pollution Control Act 1970</i>, and the major regulatory provisions of the <i>Waste Minimisation and Management Act 1995</i>.</p> <p>The Act has three tiers of environmental protection offences such as for unlawful waste disposal, spillages, discharges etc. and creates penalties for individuals and companies for contraventions of this Act.</p> <p>The Act provides general enforcement processes such as the issue of clean-up notices, prevention notices and prohibition notices by the DECC or local Council. The Act also includes a duty to notify the appropriate regulatory authority (DECC or council) of pollution incidents where material harm to the environment is caused or threatened.</p>
<p><i>Ozone Protection Act 1989</i></p>	<p>This Act regulates and prohibits the use, emission, storage and disposal of stratospheric ozone depleting substances and articles which contain those substances.</p>
<p><i>Contaminated Land Management Act 1997</i> <i>Contaminated Land Management Regulation 1998</i></p>	<p>This Act promotes the better management of contaminated land and establishes a process for investigating, and where appropriate remediating, land where contamination presents a significant risk of harm to human health or some aspect of the environment. In managing contaminated land it is necessary to comply with the requirements of this Act.</p>
<p><i>Environmentally Hazardous Chemicals Act 1985</i> and <i>Environmentally Hazardous Chemicals Regulation 1999</i></p>	<p>This Act controls the use and handling of specific chemicals and disposal of chemical wastes to control the effect on the environment. Under the Act, an inventory of chemicals which can be used in NSW is created. It is an offence to use or receive any chemical not on the inventory.</p> <p>DECC can also declare substances to be chemical wastes. The authority can then issue "chemical control orders" which regulate the disposal of these wastes. A register of all chemical wastes and chemical control orders is kept by the DECC.</p> <p>The use, storage, transportation and disposal of all chemicals and chemical wastes should meet the requirements of this Act.</p>

<p><i>Dangerous Goods Act 1975 and Regulation</i></p> <p><i>Dangerous Goods Regulation 1998</i></p>	<p>Under this Act a premises must be licensed for the keeping of explosives or other dangerous substances as prescribed under the Act and Regulation. A licence must be obtained for the storage of dangerous goods.</p> <p>The <i>Dangerous Goods Act 1975</i> creates a criminal offence for endangering life, causing injury or damaging property as a result of negligence or careless transportation, handling or storage of dangerous goods.</p>
<p><i>Local Government Act 1993</i></p>	<p>The main purposes of this Act are to provide the legal framework for an effective, efficient, environmentally responsible and open system of local government in New South Wales, regulate the relationships between the people and bodies comprising the system of local government in New South Wales and to require Councils, Councilors and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities.</p> <p>This Act will be relevant to maintenance issues involving local traffic management, waste disposal and building approvals.</p>
<p><i>Water Management Act 2000</i></p>	<p>The main objectives of this Act are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations and, in particular to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality, and to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna.</p> <p>Water extraction from a fresh water creek may require a licence/permit from DWE.</p>
<p><i>Heritage Act 1977</i></p>	<p>This Act relates to the conservation of items of heritage. Approvals from the Heritage Office are required to demolish/damage/remove/alter an item of heritage.</p>
<p><i>Native Vegetation Conservation Act 1997 and Native Vegetation Act 2003</i></p>	<p>The main objectives of these Acts are to provide for the conservation and management of native vegetation on a regional basis, to encourage and promote native vegetation management in the social, economic and environmental interests of the State, and to protect native vegetation of high conservation value. Clearing of native vegetation may require a permit.</p>

## **Appendix 4 Summary of Deed Environmental Requirements**

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## Summary of Deed Environmental Document Requirements for Maintenance

Reference	Addressed in OEMP	Details
Project Deed	Section 2	Section 2.2.2 (Nature and Extent of Maintenance Works) (g) and (h) requires the contractor to carry out the Maintenance Work to: <ul style="list-style-type: none"> <li>(i) maintain an environmental management system including environmental monitoring up to the Date of Final Completion;</li> <li>(ii) mitigate environmental impacts during the Maintenance Period.</li> </ul>
Project Deed Reporting	Section 9.3	Includes the requirement to provide an annual report to RTA on landscaping.
Appendix 4 Additional Environmental Requirements	Section 4.8	Section 4.8 requests preparation of the Operation Noise Management Report which includes a noise study on the contractors design. The study must use the input variables identified in Appendix 20 and contain the details identified in (a) to (o).
Appendix 4 Additional Environmental Requirements	Section 5.4 Fauna Fences	Subsection (j) – inspection and maintenance of the fauna fencing must be addressed in the Operational EMP. A routine fauna fence inspection and maintenance program must be developed in the project operational stages to check and rectify any breaches / gaps. Fences must be maintained in accordance with App 25 of the SWTC. Roadkill data must be kept from the date of road opening. Monitoring of usage of the fauna underpasses must be undertaken using an ecologist and sand traps.
Appendix 7 UDLP	Landscape Maintenance Report	Section 7.5.3 requires that a landscape management report be prepared for the maintenance phase of the project. This report is included in the Maintenance Manual.
Appendix 14 Project Plan Requirements	14.12 (g)	Develop the initial OEMP by 180 days prior to Construction Completion.
Appendix 24 SWTC	Section 3.3	Section 24.1.2 (Reports on maintenance work) requires that from the date of construction completion until the date of final completion the contractor must provide a report on a three monthly basis to the RTAs rep and project verifier by the seventh day of the following month in such format is required by the RTA rep containing or setting out (a) to (s) (m) a report on performance against the requirements of the EMP including monitoring and testing outcomes, air and water discharge quality, community issues (including the community and complaints register) and the status of compliance with environmental documents.
QA Specification DCMG36	Section 4.1	Requires preparation of the OEMP which addresses requirements of G36/B and App 14 of the SWTC.

Reference	Addressed in OEMP	Details
Environmental Protection (Management System)		
QA Specification DCMG36 Environmental Protection (Management System)	Section 4.14.3	Carry out an Operational audit within 28 days after end of financial year. A report of this audit must be provided to the RTA within 1 month of the date of the audit.

## **Appendix 5 OEMP Checklists**

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The following checklist will be completed on a 6 monthly basis by the Maintenance Manager. Completion of the checklist will require a full review of all relevant records (inspection documentation, checklists, maintenance record sheets) to verify that inspections are being undertaken as scheduled and that any environmental issues are being identified.

Reference	Commitment	EMP Checklist Action Required	Timing	✓
Section 2 – Environmental Obligations <b>Appendix 2</b>	Implement Dept of Planning and Concurrence Conditions of approval which relate to the operational phase.	Audit and track compliance and the progress of implementation with the requirements identified in <b>Appendix 2</b> .	6 monthly during the maintenance period	
Section 2.2 – Legal and Regulatory Requirements See also <b>Appendix 3</b>	Activities to comply with relevant NSW statutory requirements.	Review <b>Appendix 3</b> to identify any upcoming approval requirements.  Reporting to the DECC on the Environment Protection Licence until the licence is cancelled.	At all times during the maintenance period.  Monthly reporting	
Section 2.4 – Environmental Sub Plans	Comply with the requirements of each sub plans.	Audit and track compliance with the requirements contained in each sub-plan.	6 monthly during the maintenance period	
Section 3.2 – Induction and Training	All personnel, key subcontractors and consultants to be inducted.	Review induction and training records.	Annually during the maintenance period	
Section 3.3 – Communication and Consultation	Maintain complaints register.	Review complaints register to ensure all complaints have been closed out.	6 monthly during the maintenance period	
Section 3.4 – Emergency Response and Preparedness	Implement emergency preparedness measures.	Inspect storage areas and arrange 'housekeeping' if required.  Update MSDS register.  Check emergency stocks.  Update emergency contact lists and circulate as required.	6 monthly during the maintenance period  6 monthly during the maintenance period  6 monthly during the maintenance period  6 monthly during the maintenance period	
Section 5 – Compliance and evaluation of the EMP	Review the implementation of the OEMP.	Complete this checklist and follow up any outstanding items.	6 monthly during the maintenance period	

Reference	Commitment	EMP Checklist Action Required	Timing	✓
		<p>Monitor the implementation of selected SOPs to check compliance.</p> <p>Review non-conformances and close out.</p>	<p>6 monthly during the maintenance period</p> <p>6 monthly during the maintenance period</p>	
Section 6 – Review and Improvement	Review and Update the OEMP	Undertake a full review of the OEMP, Subplans and SOPs.	12 months after commencement of operation then every 2 or 3 years	
Section 7 – Records Management	Maintain records of environmental maintenance and monitoring activities.	Audit environmental record keeping processes and ensure all records are up-to-date and organised.	Annually during the maintenance period.	

**Date:**

**Completed by:**

**Follow up required:** YES NO

ATTACH DETAILS OF ACTION TAKEN (if required)

## **Appendix 6 Environmental Improvement Notice and Environmental Incident Report and Investigation Forms**

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# Environmental Incident Report and Investigation

THIS FORM TO BE RETURNED TO THE REGIONAL OFFICE WITHIN THREE (3) DAYS OF INCIDENT

<b>Project Name:</b>
<b>Date of Accident:</b>

## PART A: WHAT HAPPENED?

(Summarise the **FACTS** of the event)

Type of Incident:	
Hazardous material (hydrocarbon or chemicals)	<input type="checkbox"/>
Contaminated water discharge	<input type="checkbox"/>
Soil erosion	<input type="checkbox"/>
Dust emissions	<input type="checkbox"/>
Blasting overpressure vibration	<input type="checkbox"/>
Noise	<input type="checkbox"/>
Other (specify)	

Details of Incident	
Where? (attach sketch/map)	
At what time?	
What were the weather or other conditions?	

Was EPA notified?	YES <input type="checkbox"/>	NO <input type="checkbox"/>
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Severity Potential:	Breach of Licence Conditions <input type="checkbox"/>	EPA Fine <input type="checkbox"/>	EPA Prosecution <input type="checkbox"/>
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What property damage MAY HAVE occurred / DID occur? (circle which and describe):
Will an INSURANCE CLAIM be made? YES <input type="checkbox"/> NO <input type="checkbox"/>

Who was involved? (Provide, NAME, OCCUPATION & EMPLOYER of each person):			
	NAME	OCCUPATION	EMPLOYER
Who was at the SCENE?			
Who were WITNESSES?			
Who was SUPERVISING?			



**PART D: HOW WILL REPEATS BE PREVENTED?**

(Detail WHAT PREVENTIVE ACTIONS must be taken BY WHOM to eliminate the possibility of a similar incident occurring again.)


**PART E: AUTHORISATION AND DISTRIBUTION**

(To be completed by the personnel who conducted the Investigation and prepared this Report; copies must be issued to Abigroup Management for formal review and to others noted above or involved in the incident as determined by the Construction Manager.)

<b>INCIDENT INVESTIGATED AND REPORT PREPARED BY:</b>	
<b>Name:</b>	<b>Signature:</b>
<b>Role:</b>	<b>Date:</b>
<b>REPORT AUTHORISED BY:</b>	
<b>Name (Construction Manager):</b>	<b>Signature:</b>
	<b>Date:</b>
<b>REPORT DISTRIBUTED TO:</b>	

**PART F: MANAGEMENT REVIEW**

(To be completed by Abigroup Management – Operations/Construction/System Manager – and returned to the Project Director.)


<b>Name:</b>	<b>Signature:</b>
<b>Role:</b>	<b>Date:</b>

## **Appendix 7 Standard Operating Procedures (Environmental)**

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