



NEOEN Solar Farm Project:  
Parkes, Griffith, South Keswick, Narromine

# Environmental Management Plan

Doc ID: PL-EV-01  
Rev No.: 8  
Rev Date: 23/05/2017



---

Prepared By:  
David Glossop  
Snr Environment and  
Sustainability  
Coordinator

---

Reviewed by:  
Tony Wood  
Site Superintendent /  
OHS Manager

---

Approved By:  
Marie Chuet  
Project Director



Shaping a **Better Life**

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>5</b>
1.1	<i>Purpose .....</i>	<b>5</b>
1.2	<i>Environmental Management System .....</i>	<b>5</b>
1.2.1	Environmental Management Plan (EMP) .....	5
1.2.2	Management Sub-Plans .....	6
1.3	<i>Document Responsibilities .....</i>	<b>6</b>
1.4	<i>Document Amendment and Distribution .....</i>	<b>6</b>
1.4.1	Revision Status .....	7
<b>2</b>	<b>PROJECT DESCRIPTION.....</b>	<b>7</b>
2.1	<i>Project Overview .....</i>	<b>7</b>
2.1.1	Working hours.....	7
<b>3</b>	<b>DEFINITIONS.....</b>	<b>8</b>
<b>4</b>	<b>ORGANISATION .....</b>	<b>10</b>
4.1	<i>Project Organisational Chart .....</i>	<b>10</b>
4.2	<i>Responsibilities and Authorities.....</i>	<b>11</b>
<b>5</b>	<b>POLICIES.....</b>	<b>11</b>
<b>6</b>	<b>BYCA OBJECTIVES, KPIS AND TARGETS .....</b>	<b>11</b>
6.1	<i>Performance Measurement and Monitoring .....</i>	<b>14</b>
6.1	<i>Project Management Review .....</i>	<b>14</b>
<b>7</b>	<b>APPLICABLE REQUIREMENTS .....</b>	<b>15</b>
7.1	<i>Legal Requirements .....</i>	<b>15</b>
7.2	<i>Contractual Requirements.....</i>	<b>16</b>
<b>8</b>	<b>COMMUNICATION &amp; CONSULTATION .....</b>	<b>16</b>
8.1	<i>Internal Communications .....</i>	<b>16</b>
8.1.1	Project Site Induction.....	17
8.1.2	Pre-Start Meetings.....	17
8.1.3	Environmental Toolbox Meetings.....	17
8.1.4	Project Notice Board.....	17
8.1.5	Environmental Alerts .....	18
8.1.6	Minimum Project Rules.....	18
8.1.7	Works Coordination Meetings.....	18
8.1.8	Unplanned Engagement .....	18
8.2	<i>External Communication .....</i>	<b>19</b>
8.2.1	Public Complaints.....	19
8.2.2	Liaison with Authorities and Emergency Services .....	19
8.2.3	Community.....	19
<b>9</b>	<b>COMPETENCE, TRAINING AND AWARENESS .....</b>	<b>20</b>
<b>10</b>	<b>PROCESS CONTROL.....</b>	<b>20</b>
10.1	<i>Risk Management.....</i>	<b>20</b>
10.1.1	Project Environmental Risk Assessment.....	20
10.1.1.1	Review Frequencies .....	21

10.1.1.2	Subcontracted Work.....	22
10.1.2	Task Observations.....	22
<b>10.2</b>	<b>Environment in Design .....</b>	<b>22</b>
<b>10.3</b>	<b>Reporting and Meetings.....</b>	<b>23</b>
<b>11</b>	<b>CONTRACTOR MANAGEMENT.....</b>	<b>23</b>
11.1	Environment in Procurement.....	23
11.2	Subcontractor Environmental Management Plan.....	24
<b>12</b>	<b>EMERGENCY READINESS AND RESPONSES.....</b>	<b>24</b>
12.1	Hazard Reporting.....	24
12.2	Emergency Preparedness .....	24
12.3	Accidents and Incidents.....	25
12.4	Incident Reporting and Records.....	25
12.5	Incident Investigation .....	26
<b>13</b>	<b>PROJECT SPECIFIC ENVIRONMENTAL OBJECTIVES .....</b>	<b>26</b>
13.1	Project Specific Objectives, Factors and Impacts.....	26
13.1.1	Terrestrial Flora and Fauna .....	26
13.1.1.1	Environmental Management Objectives .....	26
13.1.1.2	Potential Environmental Impacts .....	27
13.1.2	Weed Management .....	27
13.1.2.1	Environmental Management Objectives .....	27
13.1.2.2	Potential Environmental Impacts .....	27
13.1.3	Surface Water .....	28
13.1.3.1	Environmental Management Objectives .....	28
13.1.3.2	Potential Environmental Impacts .....	28
13.1.4	Soil.....	28
13.1.4.1	Environmental Management Objectives .....	28
13.1.4.2	Potential Environmental Impacts .....	28
13.1.5	Air Quality .....	29
13.1.5.1	Environmental Management Objectives .....	29
13.1.5.2	Potential Environmental Impacts .....	29
13.1.6	Noise and Vibration .....	29
13.1.6.1	Environmental Management Objectives .....	29
13.1.6.2	Potential Environmental Impacts .....	29
13.1.7	Visual Amenity .....	30
13.1.7.1	Environmental Management Objectives .....	30
13.1.7.2	Potential Environmental Impacts .....	30
13.1.8	Indigenous Heritage.....	30
13.1.8.1	Environmental Management Objectives .....	30
13.1.8.2	Potential Environmental Impacts .....	30
13.1.9	Waste and Energy Management .....	31
13.1.9.1	Objectives .....	31
13.1.9.2	Potential Environmental Impacts .....	31
13.1.10	Chemical Storage and Spill Response Management.....	31
13.1.10.1	Environmental Management Objectives .....	31
13.1.10.2	Potential Environmental Impacts .....	32
13.1.11	Fire .....	32
13.1.11.1	Environmental Management Objectives .....	32
13.1.11.2	Potential Environmental Impacts .....	32

13.1.12	Ground Disturbance.....	32
<b>14</b>	<b>INSPECTION AND TESTING .....</b>	<b>33</b>
<b>14.1</b>	<b>Site Inspections.....</b>	<b>33</b>
14.1.1	Environmental Inspections .....	33
14.1.1.1	Inspection Records.....	34
<b>14.2</b>	<b>Inspection of Plant/Equipment .....</b>	<b>34</b>
<b>14.3</b>	<b>Environmental Monitoring .....</b>	<b>34</b>
14.3.1	Noise and vibration monitoring .....	34
14.3.2	Water quality monitoring .....	35
14.3.3	Air Quality Monitoring .....	35
<b>14.4</b>	<b>Inspection, Measuring and Test Equipment.....</b>	<b>35</b>
<b>15</b>	<b>AUDITS INSPECTIONS.....</b>	<b>35</b>
<b>16</b>	<b>NON CONFORMANCE, CORRECTIVE ACTIONS AND PREVENTIVE ACTIONS .....</b>	<b>36</b>
<b>17</b>	<b>CONTROL OF RECORDS .....</b>	<b>36</b>
<b>18</b>	<b>OPERATIONAL CONTROLS.....</b>	<b>37</b>
<b>18.1</b>	<b>Establishment/Commencement.....</b>	<b>37</b>
<b>18.2</b>	<b>Materials Control and Storage .....</b>	<b>37</b>
<b>18.3</b>	<b>Plant and Equipment Control.....</b>	<b>38</b>
<b>18.4</b>	<b>Hazardous Substances Management .....</b>	<b>38</b>
<b>19</b>	<b>REVIEW CRITERIA .....</b>	<b>39</b>
<b>Appendix 1</b>	<b>Parkes Overview and Environmental Constraints Map .....</b>	<b>40</b>
<b>Appendix 2</b>	<b>Griffith Overview and Environmental Constraints Map.....</b>	<b>41</b>
<b>Appendix 3</b>	<b>South Keswick Overview and Environmental Constraints Map.....</b>	<b>42</b>
<b>Appendix 4</b>	<b>Narromine Overview and Environmental Constraints Map .....</b>	<b>43</b>

## LIST OF TABLES

Table 1 - BYCA Project Objectives, KPIs and Targets .....	11
Table 2 - Plant and Equipment Control .....	38

# 1 INTRODUCTION

## 1.1 Purpose

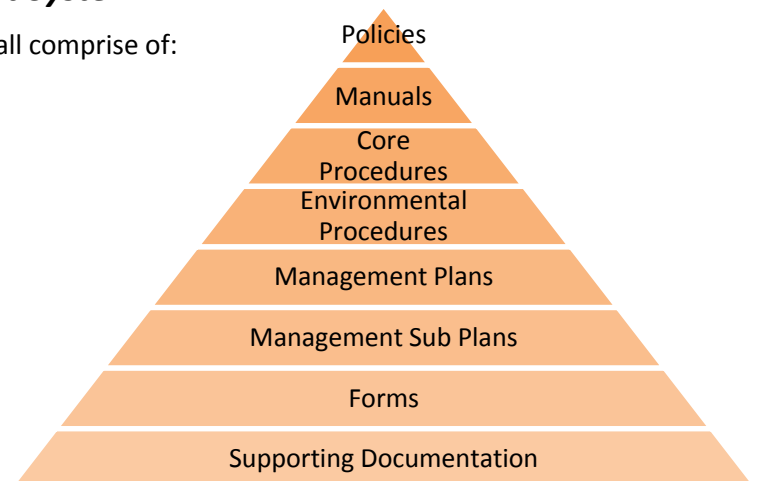
The purpose of this Environmental Management Plan (EMP) is:

- To reduce the impact on the immediate and surrounding environment by minimising environmental harm and preventing environmental incidents
- Systematically manage environmental risk
- Where practicable eliminate environmental risk, or if not practicable adequately control via application of a hierarchy of risk control
- To comply with requirements of:
  - the contract specifications
  - Legislation prescribed by the relevant Regulatory Authorities
  - BYCA Policy
  - The applicable DA conditions for each site:
    - Parkes: SSD 6784
    - Griffith: SSD 6604
    - South Keswick: 2016WES007
    - Narromine: 2016WES009
- To cover the four NEOEN sites – Parkes, Griffith, South Keswick, Narromine

## 1.2 Environmental Management System

The Project Environmental Management System shall comprise of:

- Policies
- Environmental Manual (Corporate)
- Core Procedures
- Environmental Procedures
- Environmental Management Plan (EMP)
- Environmental Management Sub-plans
- Forms
- Supporting Documentation



As such, this EMP is aligned to, and mapped with relevant sections of the Environmental Manual and Core Procedures.

### 1.2.1 Environmental Management Plan (EMP)

This EMP details environmental management measures, controls, resources and responsibilities required during the Project to comply with all the requirements of relevant legislation, conditions of applicable licences, approvals and permits.

Foreseeable aspects of the Project with potential to impact on the environment are addressed in detailed sub-plans, procedures and the Project Environmental Risk Assessment; to mitigate potential environmental impacts associated with the Project's construction works.

### 1.2.2 Management Sub-Plans

The EMP consists of the main EMP framework (this document) and detailed Management sub-plans and procedures that have been developed to mitigate potential environmental impacts associated with the Project's construction works.

The Environmental sub-plans document environmental aspects, impacts, objectives and targets, specific management guidelines, mitigation measures, safeguards, controls and roles responsible for implementing these specific measures and controls. The following management sub-plans and procedures addressing the key areas of environmental management for the Project are listed below:

- Flora and Fauna Management Plan;
- Weed Management Plan;
- Soil and Water Management Plan;
- Cultural Heritage Management Plan;
- Waste and Energy Management Plan;
- Fire Management Plan

### 1.3 Document Responsibilities

***This Environmental Management Plan (EMP) must be in place and operational prior to commencement of construction work.***

The project dedicated Project/site Engineer in conjunction with the Project manager, will ensure that the plan is monitored, reviewed, maintained and updated as necessary during the course of the project.

One hardcopy of the EMP and associated plans will be maintained by the Project/site Engineer (document controlled revision) for the duration of the contract.

The Project/site Engineer will ensure that each subcontractor is provided with relevant parts of the Project Environmental Risk Assessment for the preparation and planning of their works.

***Where any change is made to this plan that has potential to impact on the health and safety of the workforce, the environment or the work's quality; the project dedicated Project/site Engineer, must ensure details of this systemic change are effectively communicated to the site workforce and relevant stakeholders.***

### 1.4 Document Amendment and Distribution

Document amendments and distribution will be conducted as per detailed in the *PL-CO-01 Project Management Plan* and the *PL-QA-02 Records Management Plan*.

New and amended documentation issued after the initial approval and distribution of this plan to controlled copy holders shall be identified in the *FS-QA-RG-06 Document Control Register*. Revision details shall be recorded in the Section *1.4.1 Revision Status* of this plan.

All changes to documents shall be reviewed and approved by the same function that performed the original review and approval and as per the cover of this plan, unless specifically designated otherwise.

### 1.4.1 Revision Status

Revision	Revision Date	Issued Date	Nature of modification
0	21/11/2016		Contract Award revision
1	10/01/2017		
2	17/01/2017		
3	25/01/2017		
4	06/02/2017		
5	07/02/2017		
6	09/03/2017		
7	13/04/2017		

## 2 PROJECT DESCRIPTION

### 2.1 Project Overview

Site specific information including project overview and environmental constraints are provided in the following:

- Appendix 1 – Parkes
- Appendix 2 – Griffith
- Appendix 3 – South Keswick
- Appendix 4 – Narromine

The scope of works includes site preparation and early works, piling, system installation, grid connection, and testing and commissioning of the solar farms. They are broken down to 4 key stages as follows:

**Stage 1 – Early works** consisting of piling tests, road construction and upgrades for site access, including road widening and paving. Details of road upgrades are covered in the TMP for each site.

**Stage 2 – Civil works** consisting of land clearing, levelling and earthworks, internal road construction, drainage installation, laydown area preparation, fencing installation, site establishment, preparation of delivery station and inverter station, and vegetation screening/landscaping.

**Stage 3 – Mechanical works** consisting of foundation piling (ramming and auguring), tracker installation, module installation and delivery.

**Stage 4 – Electrical works** consisting of solar cabling of aerials and conduits, DC main cabling via direct burial, MV cabling from inverter station to delivery station through direct buried, module connection, connection of junction boxes-inverters-delivery station, connection to grid and finally testing and commissioning.

#### 2.1.1 Working hours

The standard hours of operation are:

- **7:00am to 6:00pm** Monday to Friday
- **8:00am to 1:00pm** Saturday; and
- No works on Sundays and Public Holidays

The following works are permitted outside these standard hours for Parkes and Griffith:

- The delivery of plant, equipment and materials which is required outside these hours as requested by police or other authorities for safety reasons; or
- Emergency work to avoid the loss of lives, property and/or to prevent environmental harm

### 3 DEFINITIONS

<b>Actitudes</b>	BYCA initiative that aligns BYCA commitments to the environment and sustainable works, the community, our customers and the health and safety of our employees
<b>ALARP</b>	As Low as Reasonable Practicable (risk management objective)
<b>BYCA</b>	Bouygues Construction Australia Pty Ltd
<b>Class 1 Environmental incident</b>	Causes or has the potential to cause pollution or degradation which has or may have long term detrimental effects on the environment and/or community and will require extensive remediation.
<b>Class 2 Environmental incident</b>	Causes or has the potential to cause pollution or degradation which has persistent (greater than three months) but reversible detrimental effects on the environment and/or community
<b>Class 3 Environmental incident</b>	Causes or has the potential to cause pollution or degradation which has short-term (less than one month) and reversible detrimental effects on the environment and/or community
<b>Dangerous Occurrence (DO)</b>	An unplanned incident event that had potential to cause injury or illness to any person, damage to property or the environment
<b>EMP</b>	Environmental Management Plan
<b>Hazard</b>	Any source of potential damage, harm or adverse health, safety or environmental effects on someone or something
<b>Hazardous</b>	Any material that, because of its quantity, concentration, or physical or chemical characteristics, may pose a real hazard to human health or the environment. Hazardous materials may be characterised by the following properties: Flammable and Combustible Material · Toxic Material Corrosive Material Oxidizers Aerosols Compressed Gases
<b>HS</b>	Health and Safety
<b>Incident</b>	Work-related event or occurrence that exposes persons health and safety, the environment or other objective to risk
<b>OHS</b>	Occupational Health and Safety
<b>QSE</b>	Quality Safety and Environmental
<b>Notifiable Incident</b>	A Notifiable Incident is defined as a pollution incident causing or threatening material harm to the environment. If an incident is a Notifiable Event then a report must be provided to the relevant regulatory authority within the timeframe(s) specified by the relevant legislation
<b>Risk</b>	Combination of the likelihood and the potential severity of an occurrence
<b>Spill</b>	The inadvertent or accidental release of a Hazardous liquid with the potential to harm the environment, outside of a bounded storage area, or area designed to capture spills
<b>Worker</b>	A person is a worker if the person carries out work in any capacity for a person conducting a business or undertaking, including work as: (a) an employee; or (b) a contractor or subcontractor; or (c) an employee of a contractor or subcontractor; or (d) an employee of a labour hire company who has been assigned to work in the person's business or undertaking; or (e) an outworker; or



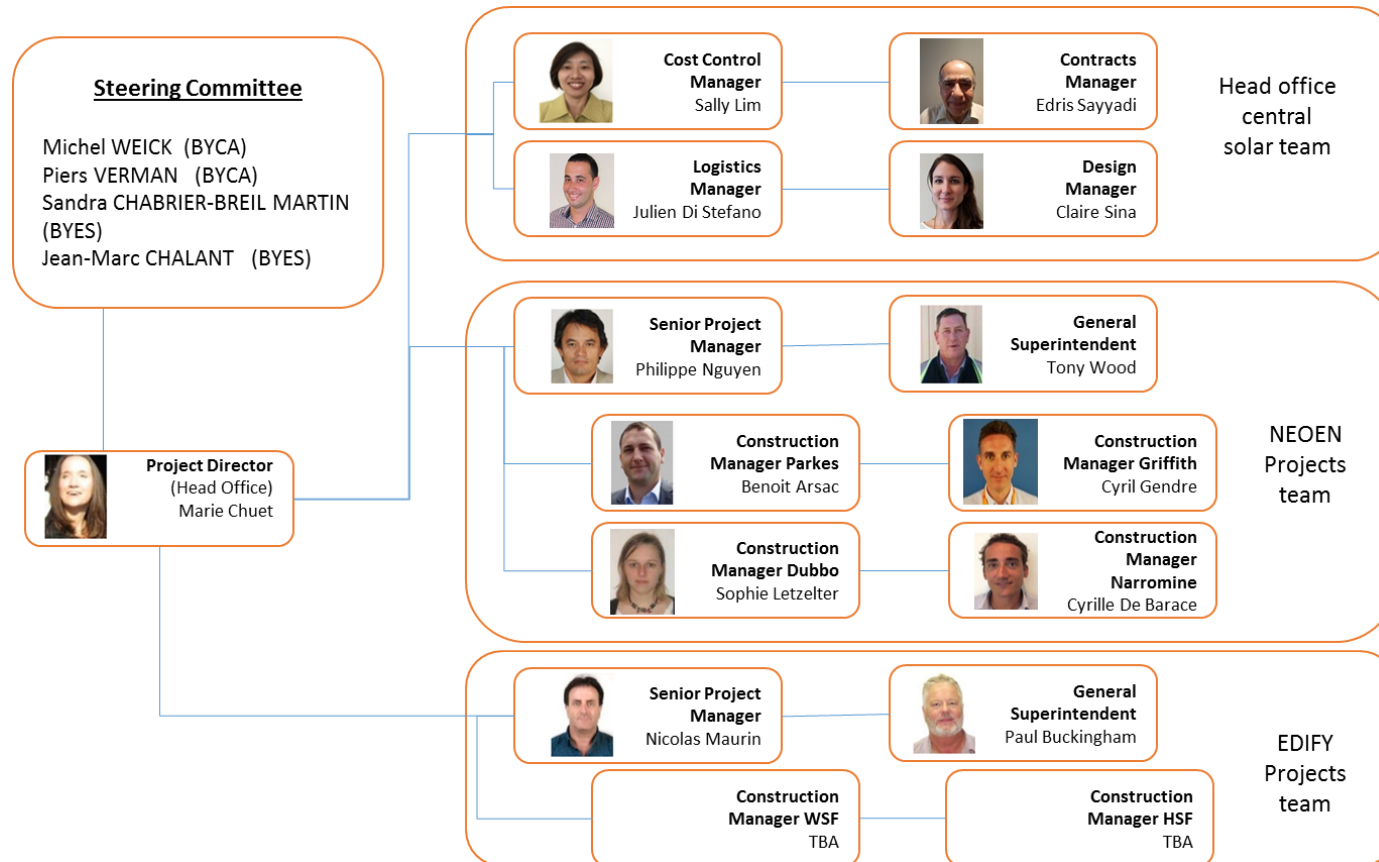
---

	(f) an apprentice or trainee or a student gaining experience
<b>Workplace</b>	An activity where personnel, equipment and tools are combined to complete a specific task or duty

---

## 4 ORGANISATION

### 4.1 Project Organisational Chart



## 4.2 Responsibilities and Authorities

Please refer to *FS-CO-RR-03 BYCA Project Responsibilities & Authorities*.

For Subcontracted work, subcontractor’s responsibilities shall be specified as part of their contract agreement and on their Subcontractor Environmental Management Plan (when required).

## 5 POLICIES

Reference documents:

*PO-EV-01 Environmental and Sustainability Policy*

*PO-CO-02 Risk Management Policy*

*PO-QA-01 Quality Policy*

*PO-HS-01 OHS Policy*

*PO-HR-23 Training and Development Policy*

## 6 BYCA OBJECTIVES, KPIs AND TARGETS

Commitment to continuous improvement forms the foundation of the BYCA Management System. This will be established through the collation, review and analysis of environmental data.

**Table 1 - BYCA Project Objectives, KPIs and Targets**

PROJECT OBJECTIVES, KPIs AND TARGETS						
	Objective	Key Indicator	Unit	Target	By	Frequency
	Report project CO <sub>2</sub> emissions	Report CO <sub>2</sub> emissions (energy purchased, diesel fuel use etc.)	Tonnes of CO <sub>2</sub> equivalent	–	HSE Coordinator	Monthly
ENVIRONMENT AND SUSTAINABLE CONSTRUCTION	Ensure that project activities conform with legal and BYCA system requirements	Notices issued by Environmental Protection Authority to BYCA / Subcontractors	No. of notices	Nil	Project Team	–
	Ensure that project activities conform with legal and BYCA system requirements Ensure effective communication of matters that have potential to impact the environment and the community	Documented Environmental Inspection ( <i>FS-EV-AT-01 Environmental Inspection Report</i> )	%	100%	HSE Coordinator	Weekly
	Ensure that project activities conform with legal and BYCA system requirements Ensure effective	No. of Environmental Non Conformances issued by Client, via Internal or External Audits	NCs issued annually	<10 per CY	Project Manager, HSE Coordinator	–

	communication of matters that have potential to impact the environment and the community	Number of documented Tool Box Meetings (TBM)	%	80%	Project Manager, HSE Coordinator	Monthly
	Ensure risk management is aligned to planning of high risk activities	Workshops held to review Project Environmental Risk Assessment	%	80%	Project manager, HSE Coordinator	Quarterly
	Ensure Non Conformances and Complaints are closed within the specified timeframe	Time to Close Non Conformances	%	80% NCs closed within specified time frame	Project Team	N/A
	Ensure Non Conformances and Complaints are closed within the specified timeframe Ensure critical QSE requirements are effectively communicated to Service Providers	Close out of Public Complaints	No. of Complains	100% of complaints closed ≤ 2 Weeks	Project Team	-

<b>CUSTOMERS AND PARTNERS FOR A SUSTAINABLE PROJECT</b>	Ensure Non Conformances and Complaints are closed within the specified timeframe	Percentage of "Significant" or high risks Subcontracts/ Supply Agreements procured including a HSE Specification ( <a href="#">FS-PC-08 HSE Contract Specifications</a> )	%	90%	Project manager, Procurement Manager, HSE Coordinator.	N/A
	Ensure critical QSE requirements are effectively communicated to Service Providers	Percentage of "Significant" Subcontracts/ Supply Agreements conducted with a Pre Contract Meeting ( <a href="#">FS-PC-09 Pre Contract Interview</a> )	%	90%	Project manager, Procurement Manager, HSE Coordinator.	N/A
	Ensure critical QSE requirements are effectively communicated to Service Providers	Percentage of "Significant" or high risks Subcontracts/ Supply Agreements procured including a HSE Specification ( <a href="#">FS-PC-08 HSE Contract Specifications</a> )	%	90%	Project manager, Procurement Manager, HSE Coordinator.	N/A
	Ensure critical QSE requirements are effectively communicated to Service Providers	Percentage of "Significant" Subcontracts/ Supply Agreements conducted with a Pre Contract Meeting ( <a href="#">FS-PC-09 Pre Contract Interview</a> )	%	90%	Project manager, Procurement Manager, HSE Coordinator.	N/A

PROJECT SPECIFIC OBJECTIVES AND KPIS						
	Objective	Key indicator	Unit	Target	By	Frequenc y
PROJECT SPECIFIC	Ensure that project activities conform with legal and BYCA system requirements	Number of Notifiable and Class 1 incidents	No.	0	Project Manager, Project/site Engineer, Superintendent	Duration of project
	Minimise impact of weeds in construction	All plant and vehicles to have valid and signed BYCA weed hygiene form	%	100	Project Manager, Project/site Engineer, Superintendent, HSE Coordinator	Duration of project

### 6.1 Performance Measurement and Monitoring

Global Environmental objectives are applied by BYCA and are established, implemented and maintained at two levels:

- BYCA Corporate
- Sites (projects, subsidiaries)

During the mobilisation phase the BYCA Project manager will review and where required develop additional targets and objectives relative to the contract and project specific risks. Project specific KPIS will be developed in alignment with the Corporate Objectives and KPIS and based on the Project Environmental Risk Assessment.

The Project manager is responsible to review performance on a regular basis with the project dedicated Project/site Engineer, and may further modify targets and objects subsequent to Management Review meetings.

Please refer to the *PL-CO-01 Project Management Plan* for further information.

### 6.1 Project Management Review

The Project manager shall convene a review at least once **annually** of the project Environmental Management System. This review aims to assess the adequacy of the Environmental Management System, project environmental performance, and develop a strategy for continuous improvement.

Please refer to the *PL-CO-01 Project Management Plan* for further information.

## 7 APPLICABLE REQUIREMENTS

### 7.1 Legal Requirements

This EMP has been developed to comply with the relevant legislative and regulatory requirements, Codes of Practice, Australian/Industry Standards, BYCA Manuals and Procedures and contract requirements.

BYCA will ensure that relevant legislations, Codes of Practice and Standards relating to the project are accessible to all persons via the BYCA file directory located at: *P:\01 Corporate\73 00 QSE*

The following environmental Acts, Regulations and Standards are applicable to this project:

#### NSW

- Environmental Planning and Assessment Act 1979
- Environmental Planning and Assessment Regulation 2000
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (State and Regional Development) 2011
- State Environmental Planning Policy No. 55 - Remediation of Land
- State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
- State Environmental Planning Policy No. 44 – Koala Habitat Protection
- Protection of the Environment Operations Act 1997
- Roads Act 1993
- Native Vegetation Act 2003
- Water Management Act 2000
- Threatened Species Conservation Act 1995
- National Parks and Wildlife Act 1974
- Heritage Act 1977

#### Local Government

- Parkes Local Environmental Plan 2012
- Parkes Shire Council Development Control Plan 2013
- Griffith Local Environmental Plan 2014
- Narromine Local Environmental Plan 2011
- Narromine Development Control Plan 2012
- Orana Regional Environmental Plan No. 1 - Siding Springs (Deemed State Environmental Planning Policy)
- Dubbo Local Environmental Plan 2011
- Dubbo Development Control Plan 2013

#### Commonwealth

- Environment Protection and Biodiversity Conservation Act 1999
- Native Title Act 1993
- Renewable Energy (Electricity) Act 2000

## 7.2 Contractual Requirements

BYCA have identified the most critical Environmental contractual requirements for the project, these are:

- Submission and management of approvals through RMS and/or Council
- Comply with the relevant Council and Development Approval
- Produce a Construction, Operation, and Decommissioning Environmental Plan that must include:
  - Soil and Water Management Plan including a spill response plan
  - Ground Cover Management Plan
  - Weed Management Plan
  - Traffic Management Plan
  - Cultural Heritage Management Plan
  - Vegetation Screening Management Plan

## 8 COMMUNICATION & CONSULTATION

### 8.1 Internal Communications

BYCA will implement the following methods for communicating and consulting environmental information to the workforce:

- Site Induction
- Environmental Risk Assessment
- Toolbox Meetings
- Project Rules
- Occurrence reporting and investigations
- Training
- Pre-Start Meetings
- Project Notice Boards
- Electronic media including email and internet postings
- Environmental Alerts
- Scheduled meetings with environmental inclusive in agenda
- Posters/campaign material
- Unplanned engagement
- Work Coordination Meetings

The Project/site Engineer is responsible for the allocation of tasks associated with the distribution and display of environmental information on the project e.g. maintenance of Site Environmental Notice Boards.

Please refer to the *PL-CO-01 Project Management Plan* for accessing information details.



### 8.1.1 Project Site Induction

Prior to commencement on site, **all project personnel** will undergo a site induction covering awareness of quality, safety, environment issues and controls. The site inductions will specifically include details of:

- The importance of all employees and subcontractors to conform with the environmental policy and procedures and their roles in implementing the policy and procedures
- The significance of their work in relation to potential or actual impacts to the environment
- The importance of complying with procedures and policies for benefit to the environment
- Environmental risks identified as **Extreme** and **High** from the *Environmental Risk Assessment* and their management measures
- Incident reporting requirements
- Environmental reporting requirements
- Emergency procedures
- Fire Management
- Sediment and Erosion Control
- Waste Management

**All persons on site shall be inducted.** It is a mandatory requirement that all persons who are not accompanied on site by a BYCA staff member receive the full site induction. Acknowledgement of the training will be obtained from participants by signature on a *FS-CO-CT-09 Site Induction Record*.

Please refer to *PL-CO-01 Project Management Plan* for further information.

### 8.1.2 Pre-Start Meetings

The Pre-Start Meeting (*FS-CO-CT-01 Daily Pre-Start Meeting*) is conducted by the Site Supervisor/ Superintendent prior to the commencement of work tasks/activities (either on a daily/pre-shift basis). It serves as a forum to communicate significant environmental aspects/impacts and requirements of the Project/site Engineer.

Please refer to *PL-CO-01 Project Management Plan* for further information.

### 8.1.3 Environmental Toolbox Meetings

BYCA will discuss relevant environmental aspects during the Toolbox Meetings (*FS-CO-CT-02 Toolbox Meeting Record*) to ensure all staff is aware of their responsibilities and any **Extreme** and **High** risks. Meeting minutes are maintained as records of these meetings.

Environmental Toolbox meetings shall be conducted on a **monthly** basis.

Please refer to *PL-CO-01 Project Management Plan* for further information.

### 8.1.4 Project Notice Board

The Project/site Engineer will ensure that a project notice board will be set up at each BYCA project. The project notice board will display critical Environmental information.

The project notice board is used to communicate BYCA Environmental Policies and Procedures, Emergency Procedures as well as the main environmental impacts and controls.

Please refer to the *PL-CO-01 Project Management Plan* for further information.

### 8.1.5 Environmental Alerts

In response to a significant incident which has the potential to reoccur, BYCA is committed to ensuring the incident learnings and any corrective action, is effectively communicated to all BYCA sites as soon as practicable. BYCA will communicate this information via Safety Alerts where practicable.

Environmental alerts will communicate to the workforce the prevention measures and controls to be implemented to ensure that the environmental incident won't reoccur.

The Environmental Alert will be allocated an ID number and filed.

### 8.1.6 Minimum Project Rules

The *FS-CO-CT-03 Project Site Rules* shall be prominently displayed on site at all times. As part of the induction process, all persons on site shall be informed and be provided with a copy of the project Site Rules.

Delivery personnel shall receive an induction and are requested to have this induction information within the cabin of their truck while on site or request a copy prior to entering site.

The minimum site environmental rules to be communicated to workers include, but are not limited to the following:

- Waste
- Noise and vibration
- Erosion and sediment control
- Hazardous substances
- Aquatic environment
- Biodiversity
- No go zones
- Threatened species and heritage
- Consumption
- Cleanliness and storage
- Community and media

Please refer to *PL-CO-01 Project Management Plan* for further information.

### 8.1.7 Works Coordination Meetings

Work Coordination Meetings shall convene **weekly** and include QSE matters as part of their agenda. Please refer to *PL-CO-01 Project Management Plan*.

### 8.1.8 Unplanned Engagement

The Managing Director, QSE Director, Project manager, Project Managers, OHS Manager, Project/site Engineer, Quality Manager and Site Supervisors will verbally engage with the workforce while they are on site. The purpose of the engagement will be to provide the workers with an opportunity to raise any safety, environmental or quality issues they may have or to report hazards.

## 8.2 External Communication

### 8.2.1 Public Complaints

BYCA will respond to public complaints and emergencies including environmental issues and incidents. All records of valid complaints causing environmental harm including actions taken to mitigate complaints and response time to the complainant will be kept and routinely updated on the *FS-QA-RG-09 Project Complaints Register*. The complaint will then be investigated and adequate corrective/abatement actions implemented to mitigate the cause of the complaint and prevent further environmental nuisance. Corrective actions will be recorded. Complaints will be treated as an Incident where assessed applicable and the Incident process prescribed above adopted. Reviews and audits of the project complaints register will be conducted to monitor the effectiveness of mitigation measures and identify any trends in complaints.

The following details will be recorded for all valid complaints:

- Name, address and contact number for valid complainant
- Time and date of valid complaint
- Reasons for the complaint as stated by the valid complaint
- Investigations undertaken in response to the valid complaint
- Conclusions formed
- Actions taken to resolved the valid complaint
- Any abatement or management measures implemented to mitigate the cause of the valid complaint
- Name and contact details of the person responsible for resolving the valid complaint

### 8.2.2 Liaison with Authorities and Emergency Services

At each construction work site, an emergency contact list must be established by the OHS Manager and the Project/site Engineer as part of Emergency Management requirements and as per the *PL-CO-05 Emergency Management Plan*.

The list will contain the contact names and 24-hour telephone contact numbers of all the applicable authorities and emergency services.

Please refer to the *PL-CO-01 Project Management Plan* and the *PL-CO-05 Emergency Management Plan*.

### 8.2.3 Community

The local community and relevant agencies will be informed and kept up to date with the operation and environmental performance of the development through planned community engagement meetings as well as through websites set up to provide an overview of each project, FAQ's, and a community feedback form where queries or issues can be registered.

- <http://dubbosolarhub.com.au/> (South Keswick and Narromine)
- <http://parkessolarfarm.com.au>
- <http://griffithsolarfarm.com.au/>

## 9 COMPETENCE, TRAINING AND AWARENESS

Project personnel and visitors will receive suitable environmental training to ensure they are aware of their responsibilities and are competent to carry out their work in an environmentally acceptable manner. Environmental requirements will be explained to staff during the project Site Induction, Environmental Notice Board and during Tool Box Talks as necessary.

Project staff (including subcontractors) will be provided with the following environmental information during the induction and specific environmental training:

- Environmental policies
- Promoting awareness of site-specific environmental topics
- Reporting responsibilities for environmental incidents
- Contingency and emergency planning
- Information within the EMP and related sub plans, including significant project aspects, impacts and controls
- Environmental objectives and targets for the job
- Regulatory requirements and consequent staff responsibilities

BYCA will manage the training of project personnel, site inductions (project inductions, visitor's induction and delivery driver's inductions) and activity inductions as per the *PL-CO-01 Project Management Plan*.

## 10 PROCESS CONTROL

### 10.1 Risk Management

BYCA is committed to managing risks by eliminating risk so far as is reasonably practicable, and if it is not reasonably practicable to eliminate, controlling risks to a level which is As Low as Reasonable Practicable (ALARP).

BYCA will manage environmental risk in accordance with the *PR-CO-03 Risk Management Procedure*. Please refer to the *Risk Management Procedure* and the *FS-CO-RM-01 Risk Level Matrix*, for risk acceptance criteria and hierarchy of controls.

Risks will be assessed at tender stage as well as on the design phase and recorded on the tender risk register and design risk register accordingly. The Project manager will assign a risk owner for all residual risk classified as "**High**" or "**Extreme**", and ensure that any **open "High" or "Extreme"** environmental risks are transferred onto the Project Environmental Risk Assessment and monitored in accordance with this EMP and the *PR-CO-03 Risk Management Procedure*.

Please refer to the *PL-CO-01 Project Management Plan* for further information.

#### 10.1.1 Project Environmental Risk Assessment

Environmental aspects and impacts are assessed at all stages of the project lifecycle. BYCA will develop a preliminary Environmental Risk Assessment (*FS-EV-RM-01 Project Environmental Risk Assessment*) for environmental aspects to identify and predict environmental and social impacts specific to the constructions phase of the project and subsequently develop mitigation measures.

The project Environmental Risk Assessment will consider the following aspects:

- Traffic and pedestrians
- Community
- Noise and vibration

- Air quality including dust
- Heritage (Indigenous and Non-Indigenous)
- Soil and water
- Contaminated land (including Acid sulphate soils)
- Flora, fauna and weed control
- Waste including spoil
- Asbestos
- Sustainability
- Storage and use of hazardous materials

BYCA Projects are to use the current revision of the Project Environmental Risk Assessment to:

- Communicate risks to subcontractors during tender phase and Kick Off Meetings
- Communicate project risks to site workforce, through Site induction, Environmental Notice Boards and Tool Box Talks
- Integrate environmental controls into construction methodology planning
- Develop Emergency Management Plans and determine project specific emergency response requirements

The BYCA Project manager is responsible for the coordination of a Risk Workshop for the development, and ongoing review of the Project Environmental Risk Assessment.

The Project/site Engineer is responsible to facilitate the Risk Workshops, and finalise the preparation of the Project Environmental Risk Assessment.

***The Project Environmental Risk Assessment shall be developed in the first 4 weeks of the construction program. Irrespective of the contract type (i.e. Design and Construct, or Construct Only) the Project manager is responsible for obtaining the FS-DE-RM-02 Design Risk Register from the Designer and the FS-CO-RM-06 Tender & Project Risk Register from the Tender team.***

***Any design element that has an Environmental Residual Risk assessed as either, being Extreme or High, is to be transferred onto the Project Environmental Risk Assessment, and further operational controls are to be instituted to reduce the risk level (ALARP).***

The Environmental Risk Workshop is to consist of a quorum of a minimum of 5 persons, and the composition of the workshop should be made up of the following persons:

- Project manager
- Project/site Engineer
- Project and/or Site Engineer (for each work location)
- Site Superintendent
- Client Representative

#### **10.1.1.1 Review Frequencies**

The Project Environmental Risk Assessment is to be reviewed at **quarterly intervals** via Risk Workshops, and may also be required to be reviewed:

- Subsequent to a serious incident
- Where there is a significant change in construction methodology or a legislative change that may impact the environment considerably

Subsequent to completing each review, members of the Risk Workshop shall be signatories to the current revision of the *FS-EV-RM-01 Project Environmental Risk Assessment*.

The Project/site Engineer is responsible for communicating environmental updates to the *Project Environmental Risk Assessment* to all stakeholders including subcontractors, commercial managers and workers.

#### **10.1.1.2 Subcontracted Work**

When the work is subcontracted, subcontractors are responsible for considering environmental risks on the development of their method of works.

As required, the Project/site Engineer or the BYCA Engineer responsible for procuring the subcontractor will provide the subcontractor with a copy of the relevant Environmental Risk Assessment prepared by BYCA.

Subcontractors working on environmental sensitive areas, shall prepare a site specific Environmental Risk Assessment detailing the job steps and sequence, identifying foreseeable aspects and impacts, assessing risk level and nominating control measures.

The Subcontractor's Environmental Risk Assessment should be submitted to the relevant BYCA Project Engineer (responsible for planning and coordinating the works) a minimum of **14 days prior to the commencement date** (as per Construction Program) or as per contract requirements. The Project/site Engineer or delegate is to review the Subcontractor's Environmental Risk Assessment. The task can only commence subsequent to review and acceptance of the Environmental Risk Assessment by the Project/site Engineer or delegate.

Environmental Risk Assessment should be re submitted by the subcontractors and re-reviewed by BYCA:

- Subsequent to a serious incident
- Where there is a significant change in construction methodology
- Legislative change that modifies the project systems of work

#### **10.1.2 Task Observations**

Project managers are responsible to implement a schedule for undertaking Task Observations (Task Observation Monitoring Program). The Task Observation Monitoring Program shall be developed by the OHS Manager with the collaboration of the Project/site Engineer to provide adequate coverage over all high risk tasks. BYCA project team representatives are responsible for implementing the *FS-CO-RM-05 Task Observation Program*.

The *Project Objectives and Key Performance Indicators* section of this plan conveys the frequencies for undertaking Task Observations.

The Task Monitoring Program is aimed to:

- Engage Sub Contract workers who participate in Task Observations
- Ensure environmental controls are in place and rules are being followed
- Identify potential for continuous improvement
- Ensure that trained and competent personnel are performing tasks
- Reinforce positive environmental behaviors and identify any At Risk behaviors

### **10.2 Environment in Design**

Any design elements associated with the project will include an environmental review as part of the design review. Environmental risks will be assessed in accordance with the BYCA Risk Matrix, the *PR-CO-03 Risk Management Procedure* and the *PR-DE-01 Design Control Procedure*.

The Project/site Engineer or delegate, when required, will attend the Design Risk Register workshops, to ensure that environmental constraints and protocols have been addressed.

### **10.3 Reporting and Meetings**

Reports and meetings are required to be conducted, prepared and submitted, as per BYCA Systems Management and the contract requirements. This ensures project stakeholders are kept informed of project progress, quality management, safety, risk, issues, financial and schedule performance.

Please refer to the *PL-CO-01 Project Management Plan* for further information.

## **11 CONTRACTOR MANAGEMENT**

BYCA will ensure that environmental requirements are incorporated into systems used to procure goods and services. Subcontractors must satisfy all the conditions detailed in this plan and its associated sub plans and procedures.

Environmental responsibilities will form part of the Site Induction for all personnel working on-site. Regular Tool Box Talks will be used to communicate detailed task specific responsibilities to applicable personnel, including all subcontractors.

The performance of subcontractors in relation to their contractual requirements will be monitored to ensure effective implementation and compliance of all requirements.

Please refer to the *PL-CO-01 Project Management Plan* for further information.

### **11.1 Environment in Procurement**

All items purchased for the permanent works shall be subject to verification to ensure conformance to contractual requirements. The Project/site Engineer shall liaise with procurement personnel to ensure that purchasing documents such as purchase orders, subcontracts, requests for quotes/ tenders and other market request documentation contain specifications that are consistent with achieving environmental objectives. The Project/site Engineer must ensure all subcontracts include required environmental management contractual conditions as per the *FS-PC-08 HSE Contract Specifications*. Please refer to *PR-PC-01 Purchasing Procedure*.

All subcontractors working on site will be evaluated for Environmental Management System requirements and past performance.

All subcontractors shall include environmental considerations within their work methods and work under the BYCA Environmental Management System. In addition, each subcontractor is required, as part of their statutory and contractual obligations, to provide adequate information, instruction, training and supervision to workers. The Project/site Engineer shall evaluate the required methods of control for:

- Documentation, (e.g. specifications, drawings)
- Inspection and testing, (e.g. ITP's/Checklists)
- Compliance with specifications
- Non-conforming items
- Inspection, measuring and test equipment

If the subcontractor/supplier has no existing environmental management system to satisfy the above, the Project/site Engineer shall ensure that BYCA documentation will be made available for their use.

Subcontractors working in environmental sensitive areas of the project are required to submit a Site Environmental Risk Assessment (refer to the Project Environmental Risk Assessment section of this plan), and where required a Site EMP.

### **11.2 Subcontractor Environmental Management Plan**

When required, subcontractors working in environmental sensitive areas will be required to submit to BYCA a Site EMP, in the form approved by the Project/site Engineer for the project.

Each subcontractor's EMP will be assessed by the responsible BYCA Project/site Engineer to ensure that the subcontractor has in place the adequate systems to identify and control all the hazards arising from their operations.

The performance and compliance of each subcontractor with their Site EMP will be monitored by BYCA.

## **12 EMERGENCY READINESS AND RESPONSES**

BYCA will ensure that systems are in place to effectively control an environmental emergency situation whenever it arises on a BYCA site.

A Project Emergency Management Plan will be developed by the OHS Manager, in conjunction with the Project/site Engineer, to address site specific emergency preparedness and responses. Please refer to *PR-CO-05 Emergency Management Procedure* and *PL-CO-02 Emergency Management Plan*.

### **12.1 Hazard Reporting**

All workers will be instructed that they must immediately report to their immediate Supervisor any hazard likely to impact the environment or the community. With that in mind, all workers and subcontractors involved are authorised to raise a *FS-CO-RM-03 Hazard Report*.

The Project/site Engineer shall record all reported hazards into the *FS-QA-RG-02 Corrective & Preventative Actions Register*.

### **12.2 Emergency Preparedness**

A site specific EMP (*PL-CO-02 Emergency Management Plan*) shall be developed for each BYCA project and arrangements communicated to all persons via the Site Induction, Project Notice Board and Toolbox Talk meetings. The aim of these methods of communication is to inform the planned arrangements to all persons potentially affected by an emergency situation at a BYCA project.

The key to effective prevention of environmental incidents/non-compliances is monitoring, surveillance and training. During construction activities, inspections and preventative actions will include:

- Regular inspections of construction areas and the surrounding environment
- Identification of potential and actual environmental issues/non-compliances
- On-going environmental training

Environmental and safety information on hazardous materials e.g. Safety Data Sheets (SDS), will be available at the site compound/designated chemical storage areas. Spill kits and other emergency supplies (i.e. sand bags and silt fence equipment) will also be made available. The handling, storage and use of hazardous materials (which includes both Hazardous Substances and Dangerous Goods) shall be in accordance with the *PR-HS-04 Hazardous Substances Procedure*.



Emergency Drills will be conducted to test the effectiveness of the emergency response systems. Results of all emergency evacuation drills shall be recorded inclusive of any ongoing corrective actions.

Following an emergency situation, a report will be completed by the Project/site Engineer documenting the event (*FS-EV-IM-01 Environmental Incident Report*) and lessons learnt. Emergency plans will then be modified to incorporate lessons learnt and staff will be trained on any changes to the planned arrangements.

### **12.3 Accidents and Incidents**

BYCA has an objective to eliminate environmental Class 1 and 2 incidents, and systematically reduce the occurrence of any other incident that has potential to impact the environment or the community. BYCA will follow the *PR-CO-04 Incident Management Procedure* for the reporting and investigation of all incidents at BYCA sites.

All environmental incidents must be investigated by the Project/site Engineer or nominated delegate as soon as possible after the event. When an environmental incident is part of an HS incident, the investigation will include an OHS representative as part of the investigation team. The investigation shall address the cause and/or impact of the incident.

### **12.4 Incident Reporting and Records**

***All actual or potential environmental incidents must be reported to a BYCA representative immediately.***

All personnel (including sub-contractors) are informed at Site Induction that they must report all incidents, including any dangerous occurrence, as soon as practicable to the responsible BYCA representative. Please refer to the *PR-CO-04 Incident Management Procedure*.

BYCA will ensure that any incident that causes or threatens material harm to the environment will be immediately notified to the Secretary and any other relevant agency. A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur. Harm to the environment is material if:

- it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or
- it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and
- loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

***\*it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.***

***Protection of the Environment Operations Act 1997***

#### **Parkes and Griffith ONLY**

BYCA will notify the Secretary and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident for any other incident associated with the development; and within 7 days of the date of the incident, provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

## 12.5 *Incident Investigation*

Investigations are undertaken of all incidents and injuries (including Dangerous Occurrences) in accordance with the *PR-CO-04 Incident Management Procedure*.

BYCA will investigate any environmental incident that has Class 1 or Class 2 incident potential, including analysis of incident root cause and recommendations regarding corrective actions. All investigations will be undertaken by a competent person who is conversant with the BYCA investigations procedures.

## 13 PROJECT SPECIFIC ENVIRONMENTAL OBJECTIVES

### 13.1 *Project Specific Objectives, Factors and Impacts*

This EMP in conjunction with the respective Environmental sub plans, outline the management strategies to control and mitigate environmental risks.

Each environmental factor is broken down into four components:

- **Objectives:** outlines the objectives of environmental management that BYCA will achieve during construction
- **Potential Environmental Impact:** outlines the potential environmental impact of the proposed construction activities
- **Management and contingency mitigation measures:** BYCA will achieve its environmental objectives through the identified management and mitigation measures. These measures are defined on each Environmental Management sub plans to provide clear direction to staff and contractors on how construction activities will be undertaken to limit environmental disturbance and to manage and mitigate where avoidance is not practicable
- **Monitoring:** construction activities will have impacts on the environmental and BYCA will monitor these impacts to ensure they are minimised and managed in accordance with both the environmental commitments and relevant legislation. The Environmental Management sub plans define the monitoring measures for the relevant impacts.

The Environmental Factors associated with this project are:

- Terrestrial flora and fauna
- Weed management
- Surface water
- Soil
- Noise and vibration
- Visual amenity
- Indigenous heritage
- Waste and Energy management
- Chemical storage and spill response management
- Fire

Environmental constraints associated with each of the four sites are outlined in Appendix 1-4.

#### 13.1.1 **Terrestrial Flora and Fauna**

##### 13.1.1.1 *Environmental Management Objectives*

The terrestrial flora and fauna management objectives are as follows:

- Minimisation and management of impacts on flora and vegetation not required to be cleared for construction works
- Minimisation and management of impacts to indigenous or otherwise protected fauna that are located on-site, including the protection of remaining fauna habitats
- Minimise potential entrapment, sickness, stress, injury or death to fauna
- Minimisation of ground disturbance
- Promotion of the growth of local species and a stable vegetation community through reducing access and maintenance of preserved areas

### **13.1.1.2 Potential Environmental Impacts**

Potential environmental impacts to terrestrial flora and fauna include:

- Direct loss of native vegetation abundance and biodiversity due to the clearing of vegetation within the construction area
- Direct and indirect loss of fauna abundance and biodiversity through habitat loss resulting from vegetation clearance
- Indirect impacts to flora due to alteration in hydrology and water quality of shallow groundwater during project dewatering activities
- Direct impacts to vegetation and fauna habitat due to contamination risk associated with the use of chemicals, and fuel spills from machine operations
- Noise disturbances to terrestrial fauna from project tools and machinery and vibration impacts as a result of machinery operation and construction related to operational noise
- Direct impacts associated with excessive light (if night works are proposed)
- Smothering of vegetation foliage from dust mobilised through excavation and other soil disturbances
- Introduction of plant and animal pests
- Introduction of soil pathogens

***Refer to Environmental Sub-Plan PL-EV-02 for Management Measures***

## **13.1.2 Weed Management**

### **13.1.2.1 Environmental Management Objectives**

The environmental objectives with regard to weed management during construction are:

- Meet statutory obligations in relation to weed management
- Minimisation and management of impacts on existing vegetation community and natural environment in and beyond the project area
- Promptly identify weed species and habitats and adopt specific weed control requirements
- No introduction of new weed species to previously non-infested areas
- No spread of weed species beyond those areas already infested

### **13.1.2.2 Potential Environmental Impacts**

The key potential impacts arising from the introduction and spread of weeds in the project area are:

- Destruction of terrestrial and aquatic habitats through prevention of seedling recruitment
- Changes to abundance of indigenous fauna as a result of impacts on indigenous vegetation and waterways

***Refer to Environmental Sub-Plan PL-EV-03 for Management Measures***

### **13.1.3 Surface Water**

#### **13.1.3.1 Environmental Management Objectives**

Surface water management objectives are as follows:

- Protection of the ecosystem surrounding the project area
- Emissions are to not adversely affect environmental values or the health, welfare and amenity of people and land uses
- Statutory requirements will be implemented and acceptable agreed standards will be monitored and maintained
- Minimisation and management of potential impacts to the quality of surface water resources caused by the construction work
- Maximisation of the efficient use of water for the project
- Ensure the continued use of water resources
- Control and minimise the volume of sediment, nutrients and pollutants being released off site

#### **13.1.3.2 Potential Environmental Impacts**

Potential environmental impacts to surface water:

- Alteration in hydrology and hydrogeology of the environment of underlying aquifer(s), estuaries, lakes and rivers; as a result of disturbance to groundwater-surface water connectivity
- Impacts to water quality due to landfill contaminants and leachate seeping into the groundwater and surface water bodies
- Indirect surface water contamination risks associated with construction activities adjacent to a lake and river environment due to chemical and fuel spills, unmanaged stormwater flows and run-off

***Refer to Environmental Sub-Plan PL-EV-04 for Management Measures***

### **13.1.4 Soil**

#### **13.1.4.1 Environmental Management Objectives**

The soil and erosion management objectives are:

- To reduce the potential for erosion and subsequent sedimentation
- Minimise sediment release to land and water
- Avoid unacceptable damage to native vegetation or wildlife habitats

#### **13.1.4.2 Potential Environmental Impacts**

Potential environmental impacts to soil are:

- Sediment runoff from newly exposed surfaces
- Sedimentation of waterways, wetlands, swamps and low lying areas
- Increased turbidity in creeks and associated waterways
- Disturbance to notable flora which is listed as Endangered
- Disturbance to notable flora regional ecosystems
- Disturbance to notable fauna species
- Sediment runoff/water pooling during heavy rainfall events

***Refer to Environmental Sub-Plan PL-EV-04 for Management Measures***

### **13.1.5 Air Quality**

#### **13.1.5.1 Environmental Management Objectives**

The air quality management objectives are:

- Protection of air quality
- Management of the ambient air in the vicinity of the construction works, noting the protection of site workers will be addressed as part of a the Safety Management Plan (SMP)
- Use all reasonable and practicable measures to minimise airborne dust and greenhouse gas emissions to minimise impacts on land, flora/fauna, water and air quality
- Track and report
- Minimise impacts on adjacent residents, land owners and community

#### **13.1.5.2 Potential Environmental Impacts**

The potential impacts during construction to air quality include:

- An increase in particulate matter, carbon monoxide and nitrogen oxide emissions to the environment due to the combustion of fuel and resulting exhaust emissions
- An increase in airborne dust to the environment due to:
  - construction operations
  - building material handling activities
  - onsite vehicle movements on unsealed roads and
  - clearing of flora and vegetation exposing dust
- Dust emissions may be generated as a result of earthwork activities, particularly during dry and windy conditions. Excessive dust generation may be detrimental to human health, reduce visual amenity as well as smother vegetation and impact fauna

**Refer to Environmental Sub-Plan PL-EV-05 for Management Measures**

### **13.1.6 Noise and Vibration**

#### **13.1.6.1 Environmental Management Objectives**

The environmental objectives with regards to noise and vibration management during the construction phase are:

- Minimisation and management of noise generation from the project area
- Minimisation of the impact of noise emissions on environmental values and the health, welfare and amenity of the population
- Compliance of noise emissions, both individually and cumulatively, with relevant statutory requirements
- Incorporation of measures for minimising noise emissions during construction and operation in design and procurement activities
- Undertake all reasonable and practicable measures during construction and operations to minimise noise emissions

#### **13.1.6.2 Potential Environmental Impacts**

The potential noise and vibration impact of the Project during the construction phase is:

- Vehicle and machinery operation, including excavators, drilling equipment, pile drivers and other equipment which may cause an increase in localised noise and vibration concerns to

neighbouring properties (residential, commercial and recreational), terrestrial and aquatic fauna and heritage buildings/structures

**Refer to Environmental Sub-Plan PL-EV-06 for Management Measures**

### **13.1.7 Visual Amenity**

#### **13.1.7.1 Environmental Management Objectives**

The environmental objective with regard to the management of visual amenity during the construction phase is to minimise and manage impacts to the visual amenity of the project.

#### **13.1.7.2 Potential Environmental Impacts**

The potential visual amenity impacts of the project during the construction phase are:

- Aesthetics and visual amenity issues associated with the construction that could cause concern to local residents in the area
- Some local residents and users of the public space and surrounding entertainment venues may be concerned about clearing of flora and increased traffic volumes within the project area as well as surrounding roads
- Transportation of mud from the site onto public roads

### **13.1.8 Indigenous Heritage**

#### **13.1.8.1 Environmental Management Objectives**

The environmental objectives with regard to the management of indigenous heritage during the construction phase are:

- Meet statutory obligations in relation to the management of indigenous heritage
- Implement where practicable the recommendations made by the indigenous groups of the area in relation to indigenous heritage management
- Minimise and manage impacts to the indigenous heritage environment through responsible heritage management
- Ensure changes to the biophysical environment do not adversely affect historical and cultural associations and comply with relevant indigenous heritage legislation
- Ensure emissions do not adversely affect environmental values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards
- Create awareness of historical heritage and implement an effective communication protocol

#### **13.1.8.2 Potential Environmental Impacts**

The potential impacts of the project to indigenous heritage values during the construction phase are:

- Indirect contamination to indigenous heritage sites due to run-off, unintentional spills, erosion of contaminated soil and dust
- Indirect contamination to indigenous heritage sites due to contamination of groundwater and surface water flows as a result of clearing, spills, run-off and contamination
- Ground disturbance resulting in disturbance of known or unknown indigenous sites of significance
- Impact on indigenous landscape and cultural value

**Refer to Environmental Sub-Plan PL-EV-07 for Management Measures**

## **13.1.9 Waste and Energy Management**

### **13.1.9.1 Objectives**

The environmental objectives with regard to waste and energy management during the construction phase are:

- Minimise and manage the generation of waste from construction activities of the project by reducing waste streams and recycling material where possible
- Dispose of waste in an environmentally acceptable manner and consistent with the requirements of the relevant regulatory authority
- All waste contractors are to be certified
- Reduce energy consumption
- Minimise visual impacts
- Minimise health risks to workers and the public
- Avoid contamination of soil and water
- Promote the principles and hierarchy of waste; reduce, reuse, recycle and dispose

### **13.1.9.2 Potential Environmental Impacts**

Waste streams anticipated to be generated from construction activities can be:

- Waste soils
- Contaminated soils
- Wastewater
- Stormwater
- Sewerage waste
- Industrial wastes such as scrap metals
- Controlled wastes such as hydrocarbon waste and paint residues
- Domestic wastes

The potential impacts of the project associated with poor waste and energy management during the construction phase are:

- Potential soil, groundwater/surface contamination through waste or leachate spills or leakage as a result of inappropriate storage and disposal
- Attraction of non-indigenous fauna and/or native animals through putrescible wastes
- Fire risk in waste storage areas
- The visual amenity impacted by litters
- Offensive odours from waste storage areas
- Excessive waste generation/inefficient use of resources
- Resource depletion
- Air emissions

***Refer to Environmental Sub-Plan PL-EV-08 for Management Measures***

## **13.1.10 Chemical Storage and Spill Response Management**

### **13.1.10.1 Environmental Management Objectives**

The environmental objectives with regard to the chemical management during construction are:

- Ensure safe and responsible use of all chemicals in ways commensurate with their risk to the environment

- The purchase, handling, storage and disposal of chemicals used on the project site are to be managed appropriately to have negligible impact on the environment and so they do not pose a threat to the health or safety of workers at the site
- Prevent uncontrolled releases of chemical substances into the environment
- Ensure that any spill or incident associated with chemicals is cleaned up quickly and effectively to minimise the negative impact on the environment

#### **13.1.10.2 Potential Environmental Impacts**

The potential impacts of the project associated with poor chemical and spill response management during the construction phase are:

- Potential soil, groundwater/surface contamination through chemical/oil spills or leakage as a result of inappropriate storage and use
- Fire risk at chemical/oil storage areas
- Offensive odours from chemical storage and use areas
- Toxic effects of chemicals on non-indigenous fauna and/or native animals through inhalation, ingestion and skin contact

**Refer to Sub-Plan PR-HS-04 for Management Measures**

### **13.1.11 Fire**

#### **13.1.11.1 Environmental Management Objectives**

The environmental objectives with regard to the fire management during construction are:

- Minimise the risk of a fire originated on the project and the project vicinity
- Ensure measures are in place to appropriately respond in the event of a fire
- Protect public and project personnel
- Minimise damage to, or loss of, private or public property or infrastructure
- Minimise damage to, or loss of, flora, fauna and ecosystem habitats

#### **13.1.11.2 Potential Environmental Impacts**

The potential impacts of the project associated with fire management during the construction phase are:

- Increase to fire fuel loading from clearing and grubbing
- Disruption to vehicle use and parking
- Disturbance to notable flora species –
- Disturbance to notable flora regional ecosystems
- Removal/damage to fauna habitat
- Displacement/injury/fatality of fauna

**Refer to Environmental Sub-Plan PL-EV-09 for Management Measures**

### **13.1.12 Ground Disturbance**

Ground disturbance and vegetation clearing shall be minimised at all times and conducted only in accordance with an approved Ground Disturbance Permit (FS-HS-PM-05). A Ground Disturbance Permit (GDP) must be in place prior to the commencement of any ground disturbing work related to the project. The GDP shall ensure that any land disturbance takes place according to the conditions of approval.



Any GDP breaches shall be reported as an incident through the *PR-CO-04 Incident Management Procedure*.

## 14 INSPECTION AND TESTING

Inspection and testing shall be carried out using a number of methodologies and practices to ensure that material, plant, equipment and work processes conform to required Environmental standards and requirements. BYCA shall ensure that only competent/qualified persons carry out inspection and testing.

### 14.1 Site Inspections

All site inspections will be conducted following the *PR-QA-03 Internal Audits and Inspections Procedure*.

The Project/site Engineer shall ensure that the required inspections and monitoring tasks are carried out in accordance with the Project Environmental Risk Assessment, this EMP and associated sub plans.

#### 14.1.1 Environmental Inspections

BYCA will ensure that a procedure for planning and conducting site inspections and monitoring the overall environmental performance of the site is in place so that hazards can be identified and corrective actions implemented relative to risk level. This process also aims to ensure that workers, inclusive of subcontractors where practicable, are engaged as part of the Environmental Inspection Program. All site inspections will be conducted following the *PR-QA-03 Internal Audits and Inspections Procedure*.

Environmental inspections will be conducted as per the *Table 1 - BYCA Project Objectives and KPI's* of this plan.

The Project Project/site Engineer is responsible for the development of an Environmental Inspection Program. The Project manager is responsible to periodically review the status of the inspection program, and to provide assurance regarding both the quantity and quality of inspections being undertaken.

Project environmental inspections will be conducted on a weekly basis using the following forms:

- *HSE Inspection (FS-CO-AT-01 HSE Inspection Checklist)* and *Task Observations (FS-CO-RM-04 Task Observation)*. These forms will be conducted as per the *Table 1 - BYCA Project Objectives and KPIs*
- *Environmental Inspection (FS-EV-AT-01 Environmental Inspection Report)*. This form is to be conducted by the Project/site Engineer on a **weekly basis**. The following items and processes will be monitored via this weekly checklist:
  - Site security
  - Environmental complaints
  - General waste management
  - Cleaning operations
  - Hazardous / special waste
  - Chemicals / oils / solvents / fuels
  - Water pollution prevention
  - Pollution response
  - Dust/air pollution

- Light pollution
- Noise and vibration
- Permits / licences / consents

Any actions not undertaken from the preceding week will become priority actions on the following week's sheet.

Any environmental Corrective or Preventive Actions arising from these inspections shall be recorded on the *Corrective and Preventive Actions Register (FS-QA-RG-02)*. The Project/site Engineer is responsible to maintain the Environmental Corrective and Prevention Actions Register and ensure the appropriate close out of any corrective/preventive action on a timely manner.

#### **14.1.1.1 Inspection Records**

Results of the Inspections shall be briefed to the Project manager, and where required, the project team. Inspection Records shall be retained at a project level by the Project/site Engineer and be reported via Environmental reporting system.

The Project/site Engineer is responsible for:

- Recording any identified hazards not immediately remedied into the *FS-QA-RG-02 Corrective & Preventative Actions Register*
- Monitoring and reporting to the Project manager corrective action status
- Recording and reporting Positive Performance Indicators

### **14.2 Inspection of Plant/Equipment**

The responsible BYCA Project and Site Engineers shall implement systems to ensure that procured plant and equipment arrives on site in a safe and adequate condition.

Plant and Equipment inspections will be conducted as per the Project Safety Management Plan (*PL-HS-01 Safety Management Plan*) to ensure that they comply with safety, service and maintenance requirements.

Please refer to section *18.3 Plant and Equipment Control* of this plan for further information.

### **14.3 Environmental Monitoring**

Regular site inspections and monitoring shall be undertaken throughout the project to cover a number of aspects, including the following key areas outlined below:

- Noise and vibration (as required)
- Water quality
- Air quality (as required)

#### **14.3.1 Noise and vibration monitoring**

All project activities which cause or have potential to cause noise and vibration impacts will be monitored to ensure they are carried out in accordance with requirements in specific construction noise and vibration impact assessments and the *PL-EV-06 Noise and Vibration Management Plan*.

Appropriate mitigation measures (where reasonable and feasible) will be implemented where activities exceed or have the potential to exceed noise or vibration management levels.

### 14.3.2 Water quality monitoring

Surface water monitoring will determine water quality and any potential impacts, due to construction activities, to any water body on the project or project vicinity. Any adverse environmental impacts to surface water quality identified as a result of monitoring will be managed according to the management and mitigation measures outlined in this EMP and the *PL-EV-04 Soil and Water Management Plan*.

### 14.3.3 Air Quality Monitoring

The monitoring of dust levels shall be undertaken through regular visual inspections of the work sites and activities by the Project/site Engineer or delegate.

Dust generating activities will be assessed during periods of windy conditions and ceased and rescheduled where adequate control of dust generation cannot be achieved.

Visual observation of machinery conditions shall also be undertaken during site inspections in addition to Daily Pre-Start Checks. Daily Pre-Start Checks are required to be undertaken by all plant operators on construction plant, equipment, vehicles and machinery to ensure all equipment have appropriate emission control devices, are in good working order and are being maintained correctly.

## 14.4 Inspection, Measuring and Test Equipment

Inspection, measuring and testing equipment used to monitor environmental factors will be calibrated as per manufacturer's recommendations and regulatory requirements. Inspection Monitoring and Testing will be carried out in accordance with the *PR-QA-02 Control of Inspection Measuring & Testing Equipment Procedure* and the *PL-QA-01 Quality Management Plan*.

Calibration and inspection reports/certificates will be recorded and filed as part of the project Environmental Records.

A NATA registered laboratory will be used to conduct the compliance testing to the relevant Australian/International Standards, when required.

Critical equipment subject to periodic inspection includes but is not limited to Atmospheric Monitors, Noise Monitors, etc.

## 15 AUDITS inspections

BYCA will conduct audits to ensure compliance with the BYCA Management System, legislative requirements and Australian Standards.

Such audits will be conducted:

- Within the **first 4 weeks** of work, once the site has been established
- At intervals though out the life of the project consistent with the nature of the project, and the level of risk
- At intervals no greater than **4 months**

The Quality Manager will be responsible to develop and maintain the Project Audit Schedule (*FS-QA-RG-01 Audit Schedule Register*) aligned with the BYCA Master Audit Schedule. The OHS Manager and the Project/site Engineer will participate in the audit program and will be responsible for the recoding and close out of any audit findings on their respective Non Conformances, Observation and Improvement Opportunities Register.

Project Audit Schedule will be developed and reviewed to ensure coverage over the project scope and high risks activities.

Please refer to the *PL-CO-01 Project Management Plan* for further information.

## 16 NON CONFORMANCE, CORRECTIVE ACTIONS AND PREVENTIVE ACTIONS

BYCA will manage Non Conformances, Corrective and Preventive Actions as per the *PR-QA-04 Non Conformance, Corrective and Preventive Actions Procedure*.

The Project/site Engineer shall maintain an Environmental Non Conformance Observations and Improvement Opportunities Register (*FS-QA-RG-05 Non Conformance (NC/NWN), Observation & Opportunity Improvement (OI) Register*) and an Environmental Corrective and Preventive Action Register (*FS-QA-RG-02 Corrective & Preventative Actions Register*).

## 17 CONTROL OF RECORDS

At the project level, records of environmental compliance will be managed according to the *PL-QA-02 Records Management Plan*.

A Record Filing Matrix will be established in accordance with the BYCA procedure *PR-QA-01 Document Control and Record Management Procedure*, taking into account local legislative requirements. Records to be managed include:

- Training records
- Emergency evacuation records
- Project environmental risk assessment
- Incident reports and investigations
- Plant and equipment records
- Safety data sheets
- Hazardous substances register
- Monitoring records of hazardous substances use and storage
- Inspection, monitoring and testing records
- Details of personnel qualifications
- Internal review reports
- Minutes of Environmental meetings
- Design risk register
- Corrective action and preventive action reports
- Audit reports
- Non Conformance, Observation and Opportunity for Improvement Records
- Environmental Management System Review
- Induction records
- Monthly Environmental reports

Unless otherwise specified, Environmental records must be maintained for a minimum period of **7 years** after completion of the project.

## 18 OPERATIONAL CONTROLS

### 18.1 *Establishment/Commencement*

Prior to commencement of the project the Project/site Engineer shall establish a program or schedule to address the systematic implementation of the following environmental management activities/tasks:

- Finalise the EMP and associated sub plans, forms and checklists
- Acquire licences, permits and approvals
- Develop Work Instructions
- Complete the Environmental Risk Assessment workshop at the beginning of the project and progressive workshops throughout the project as required
- Establish a filing system for environmental records
- Define the environmental requirements for the contract
- Identify and detail environmental studies on potentially sensitive/threatened flora and fauna known to exist in the area
- Define the environmental requirements for subcontractors and suppliers
- Establish a training program for environmental awareness and induction
- Establish communication with interested parties and site visits
- Establish the audit program
- Establish monitoring and testing regimes, and
- Establish environmental compliance and reporting mechanisms

The Project/site Engineer shall review the program/schedule each month to ensure that the environmental management activities and tasks nominated in the program have been progressively implemented.

### 18.2 *Materials Control and Storage*

BYCA will follow the below guidelines for materials control and storage:

- Incoming materials or items will be handled and stored in designated storage facilities or lay down areas following receipt and inspection
- Designated storage and holding areas will be provided to prevent loss, damage or deterioration of the items pending use or delivery. The method of storage and handling is dependent on the types of materials and the protection required to prevent harm to the environment
- For all chemicals that are stored on site, consideration will be given to the location and method of storage, as well as the bunding capacity to ensure they comply with AS1940.
- Chemicals will not be stored in locations that present unnecessary risk such as close to waterways or sensitive areas
- Bunding will be constructed of large enough capacity to hold 110% of the largest container held in the storage area
- Location of containers and/or lay-down areas shall be defined on a site map prior to works commencing
- A project staff member will be nominated by the Project Manager to handle stores receipt and issue, and to document the transactions. Safety Data Sheets shall be maintained for every chemical on site as per the safety management system requirements

### 18.3 Plant and Equipment Control

On arrival at site, all mobile plant and equipment will be checked at the moment of boarding to site using the *BYCA Plant Verification Checklists* and *FS-EV-AT-04 Weed Hygiene Form*. Ongoing inspections of plant will be documented in the manufacturer’s Daily Inspection Logs or Plant Maintenance Log books and typically will include:

**Table 2 - Plant and Equipment Control**

Type	Environmental Attribute to be checked	Documents Required
Plant (trucks, cranes, etc.)	<ul style="list-style-type: none"> <li>- within specified noise level,</li> <li>- engine covers secured,</li> <li>- no excessive vibration,</li> <li>- within specified air pollutant level,</li> <li>- no fuel, oil, hydraulic fluid and coolant leaks.</li> <li>- clean or brushed down.</li> </ul>	<ul style="list-style-type: none"> <li>- “Pre-start Checklist”,</li> <li>- Maintenance Log,</li> <li>- Checklist</li> </ul>
Fuel, oil, chemical and lubricant	<ul style="list-style-type: none"> <li>- Lids/covers secured,</li> <li>- no leakage/spillage,</li> <li>- marking/identification</li> </ul>	<ul style="list-style-type: none"> <li>- Safety Data Sheet</li> </ul>
Equipment (generators, pumps)	<ul style="list-style-type: none"> <li>- Within noise level (refer to ECP),</li> <li>- no excessive vibration</li> <li>- clean or brushed down</li> </ul>	<ul style="list-style-type: none"> <li>- Checklist</li> </ul>

The status of plant and equipment will be verified during site inspections and safety and environmental audits.

All plant and equipment will be cleaned or brushed down prior to departure.

### 18.4 Hazardous Substances Management

BYCA will manage Hazardous substances in accordance with the *PR-HS-04 Hazardous Substances Procedure* and the *PL-HS-01 Safety Management Plan* and will implement the following controls:

- All hazardous substances or dangerous goods procured for use on the project shall be accompanied with:
  - a Safety Data Sheet (SDS)
  - a Risk Assessment generated by the Manufacturer/ Supplier
  - adequate labelling
  - spill kits shall be available in all areas where hydrocarbons and chemicals are stored or used, where necessary, spill kits for water shall be provided
- All dangerous goods (DG) and hazardous substances shall be stored in a dedicated DG storage container which is adequately ventilated, and has adequate bunting for the quantity of DG and hazardous substances being stored
- DG shall be stored in accordance with the separation distances defined in AS/NZS 3833:2007 The Storage and Handling of Mixed Classes of Dangerous Goods
- Smoking is not permitted within 5 metres of dangerous goods storage containers

- DG storage containers shall be fitted with an external fire extinguisher which is suitably mounted and sign marked. The fire extinguisher shall comply with *AS2444 Portable Fire Extinguishers and Fire Blankets*, be 3.5 Kg minimum capacity and be Powder Type Class ABE

## **19 REVIEW CRITERIA**

This document shall be reviewed as follows:

- As requested by Management Review
- When there is a change of method and/or technology that may affect the accuracy of this document; or
- When there has been a significant event to which this document was relevant; or
- As a result of a non-conformance resulting from an audit

**Appendix 1**      ***Parkes Overview and Environmental Constraints Map***



**Appendix 2**      ***Griffith Overview and Environmental Constraints Map***

**Appendix 3**      ***South Keswick Overview and Environmental Constraints Map***

**Appendix 4**      ***Narromine Overview and Environmental Constraints Map***