



# **Construction Environmental Management Plan (CEMP)**

**Sub Plan to IPMP**

**1634**

**INTEGRATED MANAGEMENT SYSTEM**

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## 1 PURPOSE

This Construction Environmental Management Plan (CEMP) has been developed with specific information to allow for effective management and control of the project. This plan has been developed taking into consideration the Integrated Project Management Plan (IPMP), Daracon's Legal and Other Requirements including but not limited to relevant Acts, Regulations, Codes of Practice and Industry Standards / Guidelines.

In addition, the framework for this plan has been prepared to align with the Daracon Management System (DMS), AS/NZS & ISO Standards and Client requirements where applicable. The CEMP forms part of Daracon's Integrated Project Management Plan but can also be reviewed as a standalone document to verify compliance with Regulatory approvals.

## 2 PROJECT OVERVIEW AND SCOPE

The KIWE Facility Area 2 Stage 5 HCCDC18/04 project involves the following scope of work, which is covered by this CEMP for the following specific activities:

- Site Mobilisation, including Survey, services search, dilapidation report: establishment of site amenities, temporary fencing, GGBR fencing, surveys and hygiene protocols;
- Management of Haul Roads, including traffic control and maintenance;
- Installation of Erosion and Sediment Control plans, modify and maintain as works progress;
- Clearing and Grubbing of existing vegetation on site;
- Excavation, earth movement and regrading to sub-grade level, including classification and stockpiling of excavated material;
- Ongoing attendance and visual, olfactory and other required assessment as necessary to characterise the sub-grade layer as being meeting Level 1 contamination in accordance with the KIWEF MMP;
- Identification and treatment of Level 2 materials in accordance with the KIWEF MMP;
- Identification and treatment of Level 3 materials in accordance with the KIWEF MMP;
- Excavation and management of sub-grade material exhibiting contamination levels in excess of the Level 1 contamination criteria;
- Compaction and/or treatment of the sub-grade and removal of unsuitable material;
- Testing of the sub-grade, and trimming and compaction of the whole site to achieve a smooth, hard, and consistent surface to allow placement of an engineered cap (sealing layer);
- Testing of the sub-grade, and trimming and compaction of the low area and demonstration of the presence of a 500 thick sealing layer comprising in-situ and/or imported material, and excavation and replacement with imported sealing layer material as required;
- Excavate for, supply, bed, lay, and backfill for new drainage structures (such as pits, pipes, drains and liners, drop structures, sediment basins and the like);
- Capping Demonstration/ Capping Demonstration Pad;

- Win from designated areas or stockpiles, supply, place, trim and compact the capping layer which must achieve the specified level of permeability and thickness and be demonstrated by the Contractor as being fully compliant;
- Sourcing capping (sealing layer) material from Borrow Areas, stockpiles, or nominated sources;
- Supply, place, trim and compact the sealing layer which must achieve the specified level of permeability and be a minimum of 500mm thick and be accepted by the Site Auditor as being suitable;
- Undertake geotechnical investigation to confirm the in-situ sealing layer achieves the specified level of permeability and be a minimal of 500mm thick, or partial thickness where required, of suitable material and be accepted by the Site Auditor. If the in-situ sealing layer is not compliant the material shall be excavated and replaced/ compacted as required to achieve compliance;
- Undertake geotechnical investigation to confirm the NCIG capping achieves the specified permeability and be a minimum of 500mm thick of suitable material graded to 1%. If the NCIG capping is not compliant the Contractor shall seek advice from the Principal and undertake the works as directed;
- If required by the Principal, installation of Extreme Weather GGBF Refuges within the Area 2 closure works footprint to provide GGBF movement corridors throughout the Area 2 site during droughts and extended dry periods;
- Supply and install, including all seaming and welding: geotextile layers, geo-membrane liners, drainage layers and associated drainage works, and supply and undertake all QA/QC, monitoring, testing and validation reporting to verify that the works have been completed in accordance with the contract and technical specifications;
- Placement of a 100mm revegetation layer over the sealing layer, including seeding, landscaping and be demonstrated by the Contractor as being full compliant.
- Construction of and protection from erosion of drainage structures including scour protection and rock placement;
- Access tracks;
- Dust suppression as required;
- Certification of works from the Environmental Consultant, Geotechnical Consultant, and other consultants as necessary and included in a 'Validation Report' that demonstrates that the cap has been installed in accordance with the Approval of the Surrender of Licence No.6437 and all relevant conditions;
- Removal of all temporary fencing and make good any existing fencing;
- Clear/ clean stormwater lines upon the completion of contract and
- 13 week maintenance period.

Other operations will be undertaken by Daracon that are considered normal in delivery of the above activities. Additional activities may also be realised at the request of the Client throughout the duration of the project.

## 3 CEMP REFERENCE DOCUMENTS

### 3.1 LEGISLATION

- Work Health Safety Act 2011;
- Work Health Safety Regulation 2017;
- Rail Safety National Law Act NSW 2012;
- Rail Safety (*Adoption of National Law*) Act 2012;
- Rail Safety National Law Regulations 2012;
- Rail Safety (*Adoption of National Law*) Regulation 2012;
- Protection of the Environment Operations Act NSW 1997;
- NSW Threatened Species Conservation Act 1995;
- NSW Noxious Weeds Act 1993;
- NSW Heritage Act 1977;
- NSW Local Government Act 1993;
- Commonwealth Aboriginal & Torres Strait Islander Heritage Protection Act 1984;
- NSW National Parks and Wildlife Act 1974;
- NSW Native Vegetation Act 2003;
- NSW Water Management Act 2000;
- NSW Threatened Species Conservation Act 1995;
- Commonwealth Environmental Protection and Biodiversity Conservation Act 1999;
- Environmental Planning and Assessment Act 1979 No 203;
- Environmental Planning and Assessment Regulation 2000;
- NSW Pesticides Act 1999;
- NSW Pesticides Regulation 2009;
- NSW Rural Fires Act 1997;
- Biodiversity Conservation Act 2016;
- Biodiversity Regulation 2017;
- Biosecurity Act 2015;
- Biosecurity Regulation 2017;
- Contaminated Land Management Act 1997;
- NSW Waste Avoidance and Resource Recovery Act 2001;
- Protection of the Environment Operations (Clean Air) Regulation NSW 2002;
- NSW Environmentally Hazardous Chemicals Act 1985 and
- Newcastle City Council Local Environmental Plan.

### 3.2 STANDARDS, CODES OR GUIDELINES

- SafeWork NSW Codes of Practice;
- SafeWork Australia Codes of Practice;

- Australian and NZ (AS/NZS) Standards;
- Australian Rail Track Corporation (ARTC) Codes of Practice, Engineering Standards and Guidelines;
- ISO9001:2015 Quality Management System;
- AS/NZS 4801:2001 Occupational Health and Safety Management Systems;
- ISO14001:2015 Environmental Management Systems;
- Managing Urban Stormwater: Soils and Construction - Volume 1, 4th Edition (*Bluebook*);
- AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites;
- Roads & Maritime Services Traffic Control at Worksites Manual;
- Approved Methods for Sampling and Analysis of Air Pollutants in NSW;
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW;
- Bunding and Spill Management Guidelines;
- BS385 Evaluation and measurement for vibration in buildings
- Environmental Management System Guidelines;
- EPA guidelines on contaminated land management (multiple documents);
- Government Resource Efficiency Policy (GREP);
- Guideline for the Preparation of Environmental Management Plans;
- Interim Construction Noise Guideline;
- EPA Waste Classification Guidelines;
- Project approvals and/or Licensing

### 3.3 PROJECT APPROVALS AND/OR LICENSING

- NSW EPA “Approval of the Surrender of a Licence No. 6437” which has been modified with subsequent notices issued by the EPA being:
- KIWEF Surrender Variation Notice number 1510956 issued 02 May 2013,
- KIWEF Surrender Variation Notice number 1520063 issued 17 April 2014,
- Approval under Commonwealth Environmental Protection and Biodiversity Conservation Act 1999,
- Approval under Environmental Planning and Assessment Act 1979 (Part 5),
- Memorandum of Understanding (MOU) between Port Waratah Coal Services Pty Ltd, Hunter Development Corporation and Port of Newcastle Operations Pty Ltd as trustee of the Port of Newcastle Investments (Property) Trust Pty Ltd,
- Memorandum of Understanding (MOU) between Newcastle Coal Infrastructure Group Pty Ltd, Hunter & Central Coast Development Corporation Pty Ltd and Port of Newcastle Operations Pty Ltd,
- PWCS Stockpile Agreement,
- Summerhill Stockpile Agreement,
- Approvals under the Water Management Act 2000 / Water Act 1912 for access to ground or surface water during construction;



- Environment Protection Licence (EPL) in accordance with the Protection of the Environment Operations Act 1997 for extractive industries as well as crushing and grinding where applicable;
- Controlled Activity Approval where required and
- Local Council Permit(s).

### 3.4 KEY CLIENT DOCUMENTS

The following Client documents have been identified as being important to ensure Daracon deliver the project safely, with minimal environmental impact and to specification.

**TABLE 1 – KEY CLIENT DOCUMENTS**

Key Client Document Number and Name	
8489-301/4	Materials Management Plan (RCA Australia) (MMP RCA 2012)
IA19210002   Draft	Construction Environmental Management Framework (Jacobs) (CEMF Jacobs 2018)
117623029-001-R-Rev0	Golders (2011), KIWEF Closure works Green and Golden Bell Frog Management Plan
5222-002/1	Permeability and Infiltration Assessment
30011921	Geotechnical & Environmental Factual Report
0320327 Final	ERM (2016) Review of Environmental Factors (ERM)
IA192100_01  Final	Jacobs (2018) Addendum Review of Environmental Factors
318000395 - Final	Rambol (2018), EPBC Referral, Preliminary Documentation Package – KIWEF Area 2 closure works
Volume 1A 05 Technical Specification KIWEF Area 2 – 2019-05-08_Final	Kooragang Island Waste Emplacement Facility – Section 3 Technical Specification
Volume 1A 04 Preliminaries KIWEF Area 2 – 2019-05-08_Final	Kooragang Island Waste Emplacement Facility – Section 2 Preliminaries
Volume 1A 03 General Conditions GC21 Ed2 KIWEF Area 2 – 2019-07-05_Final	GC21 Ed2 General Conditions
	KIWEF – Separable Portion 1 & 2 Drawing Set
	KIWEF – Separable Portion 3 & 4 Drawing Set

Where there are changes to the above document references, communication of changes that are applicable to this project will be communicated to all workers using a suitable means of communication as prescribed within this Sub-Plan.

## 4 CONSTRUCTION ENVIRONMENTAL MANAGEMENT

### 4.1 CONDITIONS OF APPROVAL (COA)

This Construction Environmental Management Plan (CEMP) and sub plans have been prepared to comply with the Minister for Planning and Infrastructure’s Conditions of Approval for the project.

The CEMP has been developed and adopted in accordance with Daracon’s Certified Environmental Management System under ISO14001:2015, Project specifications, and the Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004).

This CEMP meets the requirements of the CoA and outlines the following at a minimum:

- Project details including activities to be undertaken;
- Specific mitigation measures and controls that can be applied onsite to avoid or minimise negative environmental impacts;
- Specific mechanisms for compliance with applicable policies, approvals, licences, permits, consultation agreements and legislation;
- Environmental management related roles and responsibilities of personnel;
- States objectives and targets for issues important to the environmental performance of the Project and
- Outlines monitoring processes to check the adequacy of controls as they are implemented during construction.

### 4.2 PREPARATION & SUBMISSION OF CEMP

Safeguards	Source	Responsible Position	Output
MITIGATION MESAURES			

<p>The CEMP for this project has been prepared in accordance with the requirements of Daracon's Environmental Management System and the Environment Policy. It incorporates all requirements of the environmental assessment documentation for the project.</p> <p>The CEMP should be reviewed during the implementation and also if and when required including the following:</p> <ul style="list-style-type: none"> <li>▪ Client recommendation for changes following review,</li> <li>▪ Opportunities for improvement or deficiencies in the project system are identified, or</li> <li>▪ Following an audit of the system or the occurrence of significant incidents and non-conformances</li> </ul>	<p>CEMF (Jacobs 2018) – 5.4</p>	<p>Project Manager</p>	
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### 4.3 PLANNING

#### 4.3.1 ENVIRONMENTAL GLOBAL RISK ASSESSMENT WORKSHOP (GRA)

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
<p>An on-site risk workshop (RW) will be held within 21 days of the contract date for the project and the following activities:</p> <ul style="list-style-type: none"> <li>▪ Access,</li> <li>▪ Materials Handling,</li> <li>▪ Temporary WHS controls and Environmental controls,</li> <li>▪ Leachate, Groundwater and Surface water,</li> <li>▪ Winning of suitable capping materials,</li> <li>▪ Importation of suitable capping materials and any necessary fill,</li> <li>▪ Erosion &amp; Sediment Control measures,</li> <li>▪ Management of the risks to threatened species (GGBF),</li> <li>▪ Other site information,</li> <li>▪ Temporary access to the peninsula</li> </ul>	<p>Preliminaries Clause 2.1</p>	<p>Project Manager</p>	

#### 4.3.2 REGULATORY REQUIREMENTS, REPORTING AND COMPLIANCE

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			

<p>The key environmental obligations for the closure works arise under the following legislation:</p> <ul style="list-style-type: none"> <li>▪ Protection of the Environment Operations Act 1997 (POEO Act);</li> <li>▪ Environmental Planning &amp; Assessment Act 1979 (EP&amp;A Act); and</li> <li>▪ Environmental Protection and Biodiversity Conservation Act 2000 (EPBC Act),</li> </ul> <p>Various environmental assessments and management plans have been prepared under these Acts as follows:</p> <ul style="list-style-type: none"> <li>• POEO Act – NSW EPA (2010), Approval of the Surrender of a licence – License 6437, Ref: 1111840 and as varied by notice number 1510956 and 1520063 and associated documents including: <ul style="list-style-type: none"> <li>- KIWEF Closure works, Green and Golden Bell Frog Management Plan prepared by Golders (2011);</li> <li>- GHD (2009), Report on KIWEF, Revised Final Landform and Capping Strategy; and</li> <li>- RCA (2012) Materials Management Plan – Kooragang Island Waste Emplacement Facility.</li> </ul> </li> <li>• EP&amp;A Act – Hunter Development Corporation Determination under Division 5.1 of the EP&amp;A Act and associated assessment documentation including: <ul style="list-style-type: none"> <li>- ERM (2016), Review of Environmental Factors, KIWEF Area 2 Closure Works; and</li> <li>- Jacobs (2018) Addendum Review of Environmental Factors, KIWEF Areas 2 Closure Works.</li> </ul> </li> <li>• EPBC Act – Notice of determination of referral number 2016/7670 and associated documentation including: <ul style="list-style-type: none"> <li>- ERM (2015), KIWEF Area 2 Closure Works, EPBC Referral;</li> <li>- ERM (2016), Response to Request for Information, KIWEF Area 2 Closure Works; and</li> <li>- Ramboll (2018), EPBC Referral, Preliminary Documentation Package – KIWEF Area 2 Closure Works</li> </ul> </li> </ul>	<p>CEMF (Jacobs 2018) – 2</p>	<p>Project Manager, ENV Manager, Site Supervisor</p>	<p>IPMP, Site Induction, Training,</p>
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**4.3.3 ENVIRONMENTAL OBJECTIVES AND TARGETS**

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-commencement of Works			

<p>See Appendix 1: <i>Achieving Environmental Objectives and Targets</i> which includes the Project Organisation Chart, description of Roles and Responsibilities, Key Performance indicators and the frequency of Monitoring and Reporting.</p> <p>Specific Objectives and Targets are included in Chapter 5 <i>Operational Control</i> for each functional area.</p>	IPMP Ch.5, Appendix 1, Appendix 2	Project Manager	As per KPI.
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#### 4.3.4 WORK METHOD STATEMENTS

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
<p>Work Method Statements will be prepared for the following activities:</p> <ul style="list-style-type: none"> <li>▪ Site Establishment,</li> <li>▪ Clearing and Grubbing,</li> <li>▪ Topsoil strip &amp; stockpile,</li> <li>▪ General earthworks,</li> <li>▪ Import and placement of capping material,</li> <li>▪ Drainage works,</li> <li>▪ Revegetation of site</li> </ul> <p>The Environmental Risks and Controls are incorporated into WMS's, including the following minimum requirements:</p> <ul style="list-style-type: none"> <li>▪ Description of the work activity, including any plant and equipment to be used; Outline of the sequence of tasks for the activity, including interfaces with other construction activities;</li> <li>▪ Identification of any environmental and/or socially sensitive areas, sites or places; Identification of potential environmental risks/impacts due to the work activity;</li> <li>▪ Mitigation measures to reduce the identified environmental risk, including assigned responsibilities to site management personnel;</li> <li>▪ Process for assessing the performance of the implemented mitigation measures.</li> </ul>	Daracon IPMP	Project Manager, ENV Manager, WHS Advisor	SWMS

#### 4.4 RESOURCES, RESPONSIBILITY AND AUTHORITY

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
See Appendix 1: <i>Achieving Environmental Objectives and Targets</i>	IPMP Appendix 1 Appendix 2	Project Manager	IPMP Appendices.

## 4.5 SELECTION & MANAGEMENT OF SUBCONTRACTORS

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
<p>Daracon will ensure subcontractor compliance with duties including planning, implementing and monitoring environmental protection measures and for keeping environmental records by managing them in accordance with Daracon's IPMP and this CEMP.</p> <p>Daracon will retain the environmental protection for the duties for the following all subcontracted work. Daracon is responsible for the surveillance of all subcontractors environmental protection measures to monitor the effectiveness of these measures. The surveillance program includes formal bi-weekly activity surveillance and weekly environmental inspections. It also includes daily supervision and visual inspections.</p> <p>All environmental documentation submitted by subcontractors will be subject to review and approval by Daracon staff to ensure compliance with the contract requirements, before works may begin.</p> <p>Environmental Checklists have been updated with checks to be made on Subcontractor's activities.</p> <p>All statistics relating to these checklists/ surveillance will be included in the monthly report.</p> <p>In accordance with Preliminaries Clause 5.2 Daracon have engaged dedicated Geotechnical and Environmental Consultants to oversee the implementation of the Environmental Protection measures. Descriptions of their roles can be found in Appendix 1.</p>		Project Manager	Inductions, Toolbox Talk and pre-start

## 4.6 COMPETENCE, TRAINING & AWARENESS

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
<p>All staff working, including sub-contractors on this site are provided with the environmental training required to competently carry out their work.</p> <p>All site staff, contractors and sub-contractors are inducted before commencing work. Daracon site personnel will conduct an onsite induction prior to commencement</p> <p>A Training Register and Induction Register is kept on site.</p>	CEMF (Jacobs 2018) – 3.2	Project Manager, Site Supervisor, WHS Co-ordinator	Site Induction, Training Matrix

## 4.7 WORKING HOURS

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			

<p>Approved working hours on this project are:  Monday – Friday 7am to 6pm  Saturdays – 8am to 1pm  No works are to occur on Sundays and Public Holidays  Management of working hours shall be in accordance with IM-PRO-0324-001 Fatigue Management  Where works are required outside of approved hours on this project, the Project Manager shall assess whether a formal request is to be submitted to the Client representative for review and approval with the relevant project authority.  See IPMP Hours of Work (Section 5.1) for Daracon’s procedures.  Daracon may at times seek approval from HCCDC for works outside these hours.  Daracon may also be required to work outside these hours without prior approval by the Principal in the following circumstances:</p> <ul style="list-style-type: none"> <li>(a) delivery of materials outside of normal working hours, where delivery at such times is required by the Police or other authorities for reasons of safety or otherwise; or</li> <li>(b) work during an emergency, where such work is necessary to avoid the loss of lives, property and/or prevent environmental harm.</li> </ul> <p>In this instance, Daracon will notify the Principal as soon as it becomes apparent that the works will extend beyond the approved hours.</p>	<p>CEMF  (Jacobs 2018)  – Appendix I  Noise  Management</p>	<p>Daracon Project  Manager</p>	<p>Site  Induction</p>
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## 4.8 COMMUNICATION

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
<p>Daracon will utilise its emergency response management plan to communicate environmental problems and incidents with site personnel, the client and relevant authorities and stake holders.</p>		<p>Project  Manager,  Site Supervisor</p>	<p>Site  Induction,  Incident  report,</p>

### 4.8.1 LIAISON WITH EPA

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			

<p>The Daracon Project Manager and or delegate are 24-hour contacts for the Project. They have the authority to stop works if necessary. They are the key emergency response personnel during a site emergency.</p> <p>The Daracon Environmental and Quality Manager (or delegate) is the authorised contact person for communications with the client and the EPA on environmental matters.</p> <p>A report will be prepared on each occasion the site is visited by EPA, and the Principal will be immediately notified. The Report will be provided to the Principal within 1 working day (24hrs) of the visit.</p> <p>If statutory notice is given to the EPA as required under the POEO Act, notification will be provided to the Secretary within 24hrs after the notification was given to the EPA.</p>		Project Manager	Report to client
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**4.8.2 COMMUNITY LIAISON AND/OR NOTIFICATION**

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
<p>Project Signage is not a requirement of the Contract. The main access point to the site will be manned at all times during work hours and an after hours contact number provided at the site entry point.</p>		Project Manager, Site Supervisor	

**4.8.3 COMPLAINTS MANAGEMENT**

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
<p>A Communications Register is kept and located on site, which will also include all enquiries and complaints received for the Project.</p> <p>Within one working day (24hrs) of receiving a complaint about any environmental issue, including any pollution incidents, arising from the Work Under the Contract, Daracon will submit a written report to the Principal detailing the complaint and the action taken to remedy the problem.</p> <p>Daracon will keep a register of all complaints, which must include the following details:</p> <ul style="list-style-type: none"> <li>(a) date and time of complaint;</li> <li>(b) method by which the complaint was made (telephone, letter, meeting, etc);</li> <li>(c) name, address, contact telephone number of complainant (if no such details were provided, a note to that effect);</li> <li>(d) nature of complaint;</li> <li>(e) action taken in response including follow up contact with the complainant;</li> </ul>		Project Manager, Project Engineer	Communication Register



(f) any monitoring to confirm that the complaint has been satisfactorily resolved; (g) If no action was taken, the reasons why no action was taken by Daracon.			
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#### 4.9 EMERGENCY PLANNING

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
Daracon will implement an emergency response management plan and all site personnel working on the project will be inducted into the requirements of the emergency response plan (IM-DDK-0323-005). Environmental risks may include use of unknown hazardous substances, pollution on site and near re-fuelling areas, working near environmentally sensitive areas or findings of Level 2 or 3 material.	CEMF (Jacobs 2018) 3.3.  IM-DDK-0323-005	Project Manager	ERMP, Site Induction

#### 4.10 MONITORING, INSPECTION AND AUDITING

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
Refer to Appendix A for a Schedule of Tests and Inspections. Project specific daily monitoring is undertaken in accordance with the project approvals and GGBF Management Plan. Environmental and ESC inspections are undertaken weekly on this project and additional ESC inspections are done prior to adverse weather conditions and after more than 10mm of rain in a 24 hr period using IM-REP-0503-001. Copies of Inspection Reports prepared by Environmental Staff will be kept with project records and will be closed out within the agreed timeframes. A risk based audit program has been prepared for this project. Refer to Table 3 of Daracon's IPMP. Sample monitoring records can be found in Appendix B including Daily Frog Fence Monitoring,	CEMF (Jacobs 2018) Ch.5 GGBF Management Plan Ch.3	Project Manager, Site Supervisor, Environmental Co-ordinator	Environmental Inspection Checklist Erosion & Sediment Control Inspections

#### 4.11 ENVIRONMENTAL NONCONFORMITIES

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			

<p>Non-compliance may be identified through routine weekly site inspections, impromptu site inspections, via the CEMF or CEMP review or audit process or be incident based.</p> <p>Environmental non-conformances may include:</p> <ul style="list-style-type: none"> <li>▪ Non-compliance with environmental management controls or mitigation measures specified within the CEMP;</li> <li>▪ Environmental incidents not threatening material harm to the environment; and</li> <li>▪ Environmental emergencies threatening material harm to the environment, including pollution from re-fuelling, significant damage to environmental controls and potential findings of Level 2 or 3 material.</li> </ul> <p>Corrective actions may be triggered by any of the above and will include immediate steps taken to control event, investigation and development additional controls to prevent recurrence. Corrective actions will be developed in consultation with the HCCDC and will be assigned to the appropriate staff for close out. All corrective actions will be tracked through to completion.</p> <p>All environmental non-conformances with project approvals, this CEMP or Daracon procedures is to be recorded as an incident, investigated and closed out in a timely manner. Close-out is required to include sign-off that corrective actions have been implemented or alternative solutions substituted. A summary of all non-conformances and associated corrective actions is to be provided to the client.</p>	<p>CEMF (Jacobs 2018) - 5.3</p>	<p>Project Manager, Site Supervisor, Environmental Co-ordinator</p>	<p>Incident Notification</p>
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**4.12 RECORDS OF ENVIRONMENTAL ACTIVITIES**

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
<p>Project records are kept on site to demonstrate compliance with this CEMP, IPMP and sub plans.</p>	<p>CEMF (Jacobs 2018) - 5.1</p>	<p>Project Manager, Site Supervisor, Environmental Co-ordinator</p>	<p>Environmental Inspection Checklist Erosion &amp; Sediment Control Inspections</p>

**4.13 MANAGEMENT REVIEW**

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
<p>A management review will be undertaken as required on this project. Nonconformities and deficiencies will be reviewed and the effectiveness of corrective and preventative actions verified. Areas of opportunity for improvement and any procedural changes required will be identified.</p>		<p>Project Manager</p>	

## 5 OPERATIONAL CONTROL

### 5.1 SOIL & WATER QUALITY MANAGEMENT

#### 5.1.1 EROSION AND SEDIMENTATION CONTROL

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVES</b>			
To comply with State and Federal approval requirements. To prevent water discharges from construction works area to the extent possible. To manage water discharged to avoid impact to receiving waters.	CEMF (Jacobs 2018) - Appendix F Water Quality Management Plan	Project Manager, Site Supervisor, Environmental Co-ordinator	As below
<b>TARGETS</b>			
No sediment or water quality impacts to the surrounding environment and waterways from the construction works.	CEMF (Jacobs 2018) - Appendix F Water Quality Management Plan	Project Manager, Site Supervisor, Environmental Co-ordinator	As below
<b>MITIGATION MEASURES</b>			
Pre-Commencement of Works			
Establishment of appropriate erosion and sediment controls to prevent sedimentation and pollution of waterways	CEMF (Jacobs 2018) Appendix F Water Quality Management	Project Manager, Site Supervisor	Erosion & Sediment Control plans, Environmental Inspection Checklist Site Induction
During Works			
Progressive erosion and sediment control plans (ESCO) will be developed and implemented prior to the commencement of topsoil stripping and earthworks,	CEMF (Jacobs 2018) Appendix F Water Quality Management	Environmental Representative, Project Engineer	Erosion & Sediment Control plans
Erosion and Sediment control structures are to be regularly inspected and maintained, particularly in advance of and following significant rainfall events		Project Manager, Site Supervisor, Project Engineer, Site Engineer, Environmental Co-ordinator	Environmental Inspection Checklist
All disturbed surfaces will be revegetated as soon as possible		Project Manager, Site Supervisor, Project Engineer	Ongoing inspections, Environmental Inspection checklist
All temporary ESC works will be removed immediately prior to final completion and all surfaces will be returned to pre-existing condition		Site Supervisor	Ongoing inspections, Environmental Inspection checklist

Provision of a shaker grid or rumble strip at site egress points		Site Supervisor	Ongoing inspections, Environmental Inspection checklist
Adequate run-off, erosion and sedimentation controls should be in place during construction, particularly in area's where run-off has the potential to impact on nearby waterways, surrounding native vegetation, EEC regrowth and existing drainage line and dam area's	CEMF (Jacobs 2018) Appendix D Flora & Fauna Management	Project Manager, Site Supervisor, Environmental Co-ordinator	Ongoing inspections, Environmental Inspection checklist

### 5.1.2 WASTE WATER MANAGEMENT

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
During Works			
Any water discharges are required to be managed to avoid pollution of waters having regard to the sensitivity of the receiving environment. In particular, any flocculants are to be demonstrated as being both effective and safe for amphibians prior to use	CEMF (Jacobs 2018) Appendix F Water Quality Management	Project Manager, Site Supervisor, Project Engineer, Site Engineer, Environmental Co-ordinator	
Wastewater management facilities shall only be provided through proprietary storage and pump out systems	CEMF (Jacobs 2018)– Appendix F Water Quality Management	Project Manager, Site Supervisor,	
Any water discharges are required to be managed to avoid pollution of waters having regard to the sensitivity of the receiving environment. In particular, any flocculants are to be demonstrated as being both effective and safe for amphibians prior to use	CEMF (Jacobs 2018)– Appendix F Water Quality Management	Project Manager, Site Supervisor, Project Engineer, Site Engineer, Environmental Co-ordinator	
<b>Hold Points – place hold points relevant to this section below.</b>			
Discharge quality must comply with the following performance criteria:			
<ul style="list-style-type: none"> <li>• TSS: &lt; 50mg/Lt (~Turbidity 30NTU),</li> <li>• pH: Between 6.5 and 8.5,</li> <li>• otherwise able to be demonstrated not to have caused pollution of waters,</li> </ul>			

### 5.1.3 STOCKPILE MANAGEMENT

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
During Works			
Top soil/mulch stockpiles to be not greater than 2.0m in height and located clear of watercourse or drainage works	CEMF (Jacobs 2018) – Appendix F Water Quality Management	Project Manager, Site Supervisor	Environmental Inspection checklist
Where necessary, long term stockpiles should be stabilised	CEMF (Jacobs 2018) – Appendix H Air Quality Management	Site Supervisor	Daily inspections, Environmental Inspection checklist

Stockpiling of spoil that may contain seeds of exotic species shall be stockpiled away from adjacent vegetation or drainage lines where they could be spread during rainfall events	CEMF (Jacobs 2018) – Appendix D Flora & Fauna Management & Appendix E Revegetation Management Plan	Project Manager, Site Supervisor	Daily inspections, Environmental Inspection checklist
Soil Stockpiles are to be placed away from vegetated area's		Project Manager, Site Supervisor	Daily inspections, Environmental Inspection checklist
Utilising existing disturbed corridors such as cleared area's, roads, tracks and existing easements where possible for set up of equipment, stockpile area's and facilities		Project Manager, Site Supervisor	Daily inspections, Environmental Inspection checklist

#### 5.1.4 WATER EXTRACTION

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
During Works			
Water for the project is being drawn from the town supply in accordance with Hunter Water procedures.		Project Manager, Site Supervisor	

#### 5.1.5 CONSTRUCTION SITE DEWATERING

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
Dewatering is not anticipated for the Project works. If dewatering is required a WMS would be prepared in accordance with Section 1.18 of the Technical Specification.		Project Manager	

#### 5.1.6 WORKS IN WATERWAYS

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
It is not anticipated that works in waterways will be required for this Project.			

##### 5.1.6.1 TEMPORARY WATERWAY CROSSINGS

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
It is not anticipated that Temporary waterway crossing will be required for this Project.			

### 5.1.7 SEDIMENT BASINS

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
The construction design for permanent sediment basins is to be in accordance with the environmental protection standards for sensitive environments based on Managing Urban Stormwater – Soils & Construction (Landcom, 2004) as well as documents from other states and internationally (such as “International Erosion Control Association – Australasia”)	CEMF (Jacobs 2018)– Appendix F Water Quality Management	Project Manager, ENV Manager	WMS
Permanent sediment basins as per the for construction design and any necessary temporary erosion and sediment control measures in advance of the bulk earthworks.	CEMF (Jacobs 2018)– Appendix F Water Quality Management	Project Manager, ENV Manager	

#### 5.1.7.1 FLOCCULATION

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
Flocculation will not be used on this project.	CEMF (Jacobs 2018)– Appendix F Water Quality Management	Project Manager, ENV Manager	
<b>Hold Points – place hold points relevant to this section below.</b>			

### 5.2 CONTAMINATED LAND

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVE</b>			
To comply with legislative requirements and ensure that hazardous / contaminated material from construction activities does not cause an environmental nuisance / harm and is handled, categorised, tracked and placed in accordance with the RCA (2012) Materials Management Plan.	CEMF (Jacobs 2018) - Appendix C Materials Management Plan	Project Manager, Site Supervisor, Environmental Co-ordinator	As below
<b>TARGETS</b>			

<p>No exacerbation of contamination during construction No environmental incidences involving contaminated/hazardous materials No pollution events of the surrounding environmental and water ways by contaminated material The movement and ultimate fate of materials is fully tracked</p>	<p>CEMF (Jacobs 2018) - Appendix C Materials Management Plan</p>	<p>Project Manager, Site Supervisor, Environmental Co-ordinator</p>	<p>As below</p>
<p><b>MITIGATION MEASURES</b></p>			
<p>Pre-Commencement of Works</p>			
<p>Daracon will engage a suitably qualified environmental practitioner to conduct onsite supervision during the earthworks processes whom will provide framework and protocols around the identification and management of contaminated materials, a role description can be found in Appendix A. Daracon have prepared a Materials Management Plan that includes a Decision Matrix to determine appropriate on-site materials categorisation, reuse, storage, treatment and management of typical soils encountered during proposed ground engaging activities. The key operational mitigation measures are included below</p>	<p>CEMF (Jacobs 2018)– Appendix C Materials Management  MMP (RCA 2012)</p>	<p>Project Manager, Site Supervisor, Environmental Supervision</p>	
<p>During Works</p>			
<p><i>Contaminated material identification and management</i></p>			
<p>Real-Time supervision by the Daracon’s Environmental Consultant. If suspected level 2, level 3 or otherwise hazardous material is identified the following steps will be undertaken:  <ul style="list-style-type: none"> <li>• Immediately cease work and contact the Site Supervisor</li> <li>• Demarcate the ‘unexpected find’ to prevent access and install appropriate environmental and safety controls.</li> <li>• Follow the management steps specified below in relation to each material classification; and</li> <li>• If substance is assessed as level 1 material not presenting an unacceptable risk to human health the Site Supervisor to remove controls and continue work</li> </ul> </p>	<p>CEMF (Jacobs 2018)– Appendix C Material Management Plan</p>	<p>Project Manager, Site Supervisor, Environmental Consultant</p>	<p>Daily Report</p>
<p><i>Level 1 Material Management</i></p>			
<p>There is no specific management required for Level 1 material on the site and Level 1 material has unrestricted onsite re-use classification (Section 5.6.1 of RCA 2012). Level 1 material may be used for:  <ul style="list-style-type: none"> <li>• Topsoil where sourced from top 100mm of existing landform;</li> <li>• General land forming;</li> <li>• Buffer material to be placed above Level 2 and Level 3 Material;</li> <li>• Interim bunding for stockpiled material; and</li> <li>• Site capping material.</li> </ul> Level 1 material properties will be validated in accordance with the Tender Specifications for testing and analysis.</p>	<p>CEMF (Jacobs 2018)– Appendix C Material Management Plan</p>	<p>Project Manager, Site Supervisor, Environmental Consultant</p>	<p>Daily Report</p>
<p><i>Level 2 Material Management</i></p>			



<p>Level 2 material is designated as having restricted site use and where encountered is to be managed as follows:</p> <ul style="list-style-type: none"> <li>• Where suspected Level 2 soils are encountered then the nature and extent of the materials will be validated by laboratory testing to assess whether the materials are still to be classified as Level 2 or Level 3 materials.</li> <li>• If Level 2 material is encountered but is to remain in place having sufficient cap (ie &gt;500mm), the vertical extent does not need to be validated. The Principal will be notified in accordance with Level2/3 Notification Form (Appendix B). within 24 hours of encountering Level 2 material.</li> <li>• Level 2 material may be relocated to a lined skip-bin or covered short-term stockpiling for further quantification, characterisation and categorisation.</li> <li>• Confirmed Level 2 contaminated material is to be isolated by covering with at least 500mm of Level 1 material, plus 500mm of cap with preference for material to be left in situ provided there is no immediate risk to the environment or community or otherwise be relocated to an on-site location</li> </ul>	<p>CEMF (Jacobs 2018)– Appendix C Material Management Plan</p>	<p>Project Manager, Site Supervisor, Environmental Consultant</p>	<p>Daily Report</p>
<p><i>Level 3 Material Management</i></p>			
<p>Level 3 material is designated as having restricted site use and must managed as follows:</p> <p>The Principal will be notified as soon as reasonably practicable and on the same day of encountering the material (See Appendix B for Notification Form)..</p> <ul style="list-style-type: none"> <li>• The Principal will then notify the EPA;</li> <li>• Level 3 material may be relocated to a lined and covered stockpile or skip bin for further characterisation and categorisation and while a decision is made by the Principal on the preferred manner of ultimate disposal. The Principal will provide direction as to the required treatment of Confirmed Level 3 contaminated material which may include:</li> <li>• Isolated by covering with at least 1000mm of Level 1 material, plus 500mm of cap with preference for material to be left in situ provided there is no immediate danger to the environment or community or otherwise be relocated to an on-site location with the area having appropriate controls in place; or Transported off-site for disposed in a legal manner.</li> </ul>	<p>CEMF (Jacobs 2018)– Appendix C Material Management Plan</p>	<p>Project Manager, Site Supervisor, Environmental Consultant</p>	<p>Daily Report</p>
<p><i>Asbestos Management</i></p>			
<p>Asbestos materials (and ACM) will be managed generally as follows as specified in RCA MMP (2012):</p> <ul style="list-style-type: none"> <li>• Where at all possible, materials containing bonded asbestos wastes would be fully delineated, be assessed to be at least 1m below final capping, and remain as undisturbed materials managed by in-situ containment;</li> <li>• Should any fill materials containing bonded asbestos wastes require excavation as they are not in-situ more than 1m from the final cap in the earthworks, then consideration would be given to removing the materials and emplaced at a depth of 1m;</li> <li>• Friable asbestos would be assessed and considered for emplacement at a depth of 2.5m below the underside of the capping layer within a purpose-built excavation at a location to be agreed with the Principal;</li> </ul>	<p>CEMF (Jacobs 2018)– Appendix C Material Management Plan</p>	<p>Project Manager, Site Supervisor, Environmental Consultant</p>	<p>Daily Report</p>

<ul style="list-style-type: none"> <li>• Final location of any asbestos discovered shall be thoroughly documented including accurate survey of the emplacement area; Where asbestos waste is found in fill that also contains volatile organic compounds or separate phase hydrocarbons, appropriate treatment for recorded contaminants will be required; and</li> <li>• All asbestos is to be managed and handled in accordance with the recommendations of an appropriately licensed Asbestos Assessor/handler. The use of in-situ or ex-situ treatment approach for any materials containing bonded and friable asbestos wastes will be assessed on a case by case basis in relation to volume and risk to human health</li> </ul>			
<p><i>Other Wastes</i></p>			
<p>Minimal volumes of material requiring off-site disposal have been encountered in previous stages of KIWEF closure works. In the event that such material is encountered it will be classified in accordance with the Waste Classification Guidelines (2015) and disposed of to a landfill legally able to accept the waste. Wastes generated in completing the capping works are also required to be disposed of off-site.</p> <p>All other contaminated materials will be managed on site in accordance with the Materials Management Plan.</p> <p>Waste management measures to be implemented include:</p> <ul style="list-style-type: none"> <li>• Licensed waste contractors will be utilised to remove waste.</li> <li>• All waste is to be disposed of at a lawful facility (Note: A lawful facility includes one that has the appropriate Development Consent, Environment Protection Licence or is complying with EPA approved conditions and requirements).</li> <li>• Waste must be classified prior to disposal – refer to NSW EPA Waste Classification Guidelines (2015).</li> <li>• Records of the quantity and final locations of all on and offsite waste will be maintained</li> <li>• Provision of skip bins (or equivalent) to be used to collect all general wastes generated during the works.</li> <li>• Provide an adequate number of skip bins on site to contain all general waste generated throughout the works.</li> <li>• Provide bins to enable waste segregation</li> <li>• Provide recycling services (e.g. Paper, Concrete, Steel, Cardboard, Timber).</li> <li>• Ensure housekeeping is maintained and waste is disposed of to the appropriate bin.</li> <li>• Retain waste disposal permits and figures on the amount of waste that has been removed from site.</li> </ul>	<p>CEMF (Jacobs 2018)– Appendix C Material Management Plan</p>	<p>Project Manager, Site Supervisor, Environmental Consultant</p>	<p>Daily Report/Bi-Monthly WRAPP Report</p>
<p>Post Completion of Works</p>			
<p>At the completion of the works, a Validation Report is required to satisfy Condition 4h of the Surrender Notice which requires that there is written confirmation that the cap was established in accordance with relevant specifications as follows:</p> <p>“Within three months of completion of the installation of the final cap, the licensee must provide the EPA with a written Validation Report that includes:</p>	<p>CEMF (Jacobs 2018) – 5.2.3</p>	<p>Project Manager, Geotechnical Consultant</p>	<p>Validation Report</p>

<p>i) Advice that the final cap has been installed;</p> <p>ii) Advice from a suitably qualified and experienced person as to whether or not the cap was installed in accordance with Chapter 7 of the Landform and Capping Strategy and relevant conditions of this Notice, or future variations to this Notice. Please refer to MMP for details.</p> <p>iii) Provision of the results of all relevant test results to validate that the permeability of the final capping layer is less than or equal to <math>K = 1 \times 10^{-7} \text{m/s}</math>. Permeability testing must be taken of the sealing layer material at a rate of not less than 1 per 2000T (or 1250m<sup>3</sup>);</p> <p>iv) Provision of information that establishes the thickness of the installed sealing and revegetation layers in the format of either:</p> <p>(i) As constructed drawings, including cross sections, of the surfaces of the coal washery reject layer; and</p> <p>(ii) The results of surveys undertaken for each capping layer by a registered surveyor”.</p>			
<p><b>Hold Points – place hold points relevant to this section below.</b></p>			
<p> </p>			

### 5.3 SPILL PREVENTION AND RESPONSE

Safeguards	Source	Responsible Position	Output
<p>MITIGATION MEASURES</p>			
<p>Pre-Commencement of Works</p>			
<p>All staff will be made aware of the Emergency Response Management Plan (ERMP) and Site Emergency Plan. Daracon’s OW1.07 Working with and Storage of Hazardous Chemicals may be used by Daracons Senior Management for training purposes.</p>	<p>CEMF (Jacobs 2018) – Appendix B Environmental Obligation interface</p>	<p>Project Manager</p>	<p>Site Induction</p>
<p>During Works</p>			
<p>Various fuels, oils, and other hazardous chemicals may be used and/or stored on site.</p> <p>All chemicals are stored in accordance with the manufacturer’s instructions and the MSDS.</p> <p>Fuel and other chemicals will be stored and handled in accordance with relevant Australian standards such as:</p> <ul style="list-style-type: none"> <li>▪ AS 1940-2004 The storage and handling of flammable and combustible liquids;</li> <li>▪ AS/NSZ 4452:1997 The storage and handling of toxic substances;</li> <li>▪ AS/NZS 5026:2012 The storage and handling of Class 4 dangerous goods; and</li> <li>▪ AS/NZS 1547:2012 On-site domestic wastewater management.</li> </ul> <p>Hazardous liquids and chemicals will be stored in a covered, bunded area with capacity to retain 110% of the largest container in the event of a spill.</p>	<p>CEMF (Jacobs 2018) – Appendix B Environmental Obligation interface</p>	<p>Project Manager, Site Supervisor</p>	<p>Site Induction, Environmental checklist</p>

<p>Fully stocked spill kits will be available onsite and all operators and personnel will be made aware of the location and be trained in their use.</p> <p>Refuelling is not to occur in the vicinity of sediment dams, drainage lines or water bodies</p> <p>Refuel plant using drip trays/spill mats and other spill containment devices.</p> <p>Do not leave chemical containers open outside or inside of the bunded areas.</p> <p>Spills are to be immediately contained and absorbed using materials provided in the spill kit.</p> <p>All personnel are to be trained in the appropriate use and disposal of spill kit materials.</p>			
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## 5.4 AIR QUALITY

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVES</b>			
To ensure that dust and other air emissions from construction activities do not cause impacts on sensitive receivers and equipment.	CEMF (Jacobs 2018)– Appendix H Air Quality	Project Manager, Site Supervisor, Geotechnical Consultant	Environmental checklist, Geotech Daily Report
<b>TARGETS</b>			
No visible dust (or offensive odours) leaving site and reaching: <ul style="list-style-type: none"> <li>Identified or potential GGBF habitat, particularly water bodies and fringing vegetation; and</li> <li>Cormorant Road or neighbouring coal loader operations.</li> </ul>	CEMF (Jacobs 2018)– Appendix H Air Quality	Project Manager, Site Supervisor, Geotechnical Consultant	Environmental checklist, Geotech Daily Report
<b>MITIGATION MEASURES</b>			
During Works			
Use of water sprays to reduce dust emission from trafficable area's, work area's stockpiles and other exposed area's	CEMF (Jacobs 2018) – Appendix H Air Quality Management		Environmental Inspection checklist
Reduce the number of and extent of disturbed area's at a given time during the remediation activity onsite		Project Manager, Site Supervisor, Project Engineer	Environmental Inspection checklist
Control of haul loading vehicles, whereby the load will not exceed the height of the haul boards and tailboards on the vehicles		Site Supervisor,	Environmental Inspection checklist
The vehicle speed onsite shall be restricted along the haul roads to minimise dust generation and potential spilling of hauled material		Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist

Cleaning/maintenance of the access and haul roads on site to minimise dust generation and potential spilling of hauled material		Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Loads of soil or contaminated material entering and leaving the site will be covered. Internal material transport may also require a cover if material is likely to or observed to be generating dust		Project Manager, Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Any excavated material likely to generate odours will be covered		Project Manager, Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Maintenance and servicing of plant and vehicles to minimise and reduce emissions of air pollutants		Project Manager, Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Observations of prevailing (and forecast) weather conditions to program site activities in order to minimise air quality issues		Project Manager, Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Modify work practices during dry and windy conditions		Project Manager, Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Provide shaker grids or rumble strip at site egress points and where aggregate is used, minimum size is 150mm		Project Manager, Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Remove mud from haul vehicles prior to entering public roads		Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
Provide awareness training in the need to minimise dust during site inductions and toolbox talks		Project Manager	Site Induction, Daily prestart
Any water required for dust suppression will be drawn from ponds established for the purpose. No water for dust suppression will be drawn from existing ponds on the site. All water required for dust suppression will be drawn from a metered standpipe from Hunter Water network	CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor	Site Induction, Daily prestart, Environmental Inspection checklist
<b>Post Completion of Works</b>			
Progressively stabilise and or revegetate as area's of work are completed	CEMF (Jacobs 2018) – Appendix H Water Quality Management	Project Manager, Site Supervisor	Environmental Inspection checklist

### 5.4.1 FIRE SAFETY AND BURNING OFF

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
During Works			
<p>No burning off of any material on site.</p> <p>Fire Extinguishers are provided on site, within plant and in vehicles to ensure the safety of personnel and property.</p> <p>All items of plant used during proclaimed high fire danger periods that could discharge sparks must be fitted with spark arresters. Do not undertake cutting, welding, grinding or other activities likely to generate fires in the open on days when a total fire ban is proclaimed.</p> <p>When there is a risk of fire being caused by work such as welding, thermal or oxygen cutting, heating or other fire producing or spark producing operations or when burning off is proposed, training to all personnel in fire prevention, fire safety and basic firefighting skills.</p> <p>Total fire ban declarations and resultant work restrictions will be communicated to staff by pre-start.</p> <p>If hot-works are anticipated for the days activities the NSW Rural Fire Service website will be viewed by the Project to determine if there is a fire ban - <a href="https://www.rfs.nsw.gov.au/fire-information/fdr-and-tobans">https://www.rfs.nsw.gov.au/fire-information/fdr-and-tobans</a></p> <p>During total fire bans, the various items of plant that have the potential to discharge sparks, are fitted with spark arresters.</p>		<p>Project Manager, Site Supervisor</p>	<p>Daily Prestart &amp; Toolbox, Site induction, Hot work permit,</p>

### 5.5 NOISE CONTROL

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVES</b>			
<p>To ensure that noise and vibration from construction activities does not cause environmental nuisance or unnecessarily disturb fauna.</p>	CEMF (Jacobs 2018)– Appendix I Noise Management	Project Manager, Site Supervisor	Daily Prestart & Toolbox, Site induction,
<b>TARGETS</b>			
<p>No valid noise / vibration complaints resulting from construction works.</p> <p>No unreasonable noise or vibration.</p> <p>No noise and vibration impacts on external receptors</p>	CEMF (Jacobs 2018)– Appendix I Noise Management	Project Manager, Site Supervisor	Daily Prestart & Toolbox, Site induction,
<b>MITIGATION MEASURES</b>			
Pre-Commencement of Works			

Awareness training and information will be provided to project personnel in relation to the vibration requirements on the project and the need to minimise vibration when in close proximity to operational area's (rail corridor),	CEMF (Jacobs 2018) – Appendix I Noise Management	Project Manager, Site Supervisor	Daily Pestart & Toolbox, Site Induction
Selection of the most appropriate plant and equipment to minimise noise generation and include where necessary screening and enclosures,		Project Manager, Site Supervisor	Plant pre-start checklist
<b>During Works</b>			
Construction works are confined to normal working hours: Monday to Friday 7 am to 6 pm, Saturday 8 am to 1pm No work on Sunday or public holidays. No works to be undertaken outside of the agreed hours without prior approval (except in emergency situation),	CEMF (Jacobs 2018) – Appendix I Noise Management	Project Manager, Site Supervisor	Site Specific Induction, Daily Prestart checklist for plant and machinery,
Avoid where practical the use of noisy plant simultaneously close together or adjacent to sensitive receptors and stationary noise generating equipment to be orientated away from sensitive areas.		Project Manager, Site Supervisor	
All plant will be maintained in accordance with the manufacturer's requirements.		Site Supervisor, Plant Mechanics, Plant operators	Daily plant pre-start, Site Induction
Undertaking loading and unloading activities away from sensitive areas and during designated construction hours,		Site Supervisor	Site Induction
Regular checks are to be undertaken to ensure all equipment and vehicles are in good working order and are operated correctly, and;		Plant operator	Daily plant pre-start, Site Induction

**5.6 GROUND VIBRATION & AIRBLAST**

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
<b>During Works</b>			
Given that the types of machinery to be used during construction do not have significant impact energy and that blasting is not required, vibration from these activities are not likely to be detectable to the nearest residents. Awareness training and information will be provided to project personnel in relation to the vibration requirements on the project and the need to minimise vibration when in close proximity to operational areas (rail corridor). Refer to ETC-08-04.	CEMF (Jacobs 2018) – Appendix I Noise Management	Project Manager, Site Supervisor	

## 5.7 BIODIVERSITY

### 5.7.1 VEGETATION MANAGEMENT

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVES</b>			
To comply with contractual and legislative requirements and ensure that native fauna and flora are protected from construction activities.	CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor	Environmental Inspection checklist
<b>TARGETS</b>			
No unapproved destruction of flora	CEMF (Jacobs 2018)– Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor	Environmental Inspection checklist
<b>MITIGATION MEASURES</b>			
Pre-Commencement of Works			
Care should be taken that any noxious weeds occurring on the site are not to be further dispersed.	CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan	Project Manager, Site Supervisor	
During Works			
Plant and equipment brought on to site will be cleaned and free of deleterious material, mud and other material that may harbour weed seeds. Any capping materials imported from outside the KIWEF facility will be sourced from an area that is assessed as having a low risk of containing Chytrid Fungus. Topsoil to be used for surface layers will be sourced from within KIWEF to the extent possible and will otherwise be assessed as required.	CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan	Project Manager, Site Supervisor	

### 5.7.2 NOXIOUS WEED MANAGEMENT

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
During Works			



Care should be taken that any noxious weeds occurring on the site are not further dispersed as a result of the works. A follow up weed control program may be necessary to control the encroachment of these species into surrounding areas. The landowner has a legal responsibility to control and suppress these species on their property under the Noxious Weed Act 1995. The weed control program should remove weeds by physical means and avoid the use of herbicides	CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor	Environmental Inspection checklist
Noxious weeds are to be managed in accordance with the expectations under the Biosecurity Act 2018. It is recommended that the plants be removed by physical removal, as herbicides may impact GGBF's and their habitat.		Project Manager, Site Supervisor	Environmental Inspection checklist Daily Site Visual Inspection
Plant and equipment brought onto site must be cleaned and free of deleterious material, mud and other material that may harbour weed seeds		Project Manager, Site Supervisor	Plant pre delivery inspection, Site Induction,
Bitou Bush and Crofton Weed would be managed by following the Local Noxious Weed Control Plans (NCC 2006). It is recommended that the plants be removed by physical removal, as herbicides may impact GGBFs and their habitat.	CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan	Project Manager, Site Supervisor	Environmental Inspection checklist Daily Site Visual Inspection

**5.7.3 FAUNA MANAGEMENT**

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVES</b>			
To comply with contractual and legislative requirements and ensure that native fauna and flora are protected from construction activities.	CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor, Environmental Consultant	Daily Frog Fence Check, GGBF Mortality Report, Environmental Inspection checklist
<b>TARGETS</b>			
No death or injury to fauna including the Green and Golden Bell Frog	CEMF (Jacobs 2018)– Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor	Daily Frog Fence Check, GGBF Mortality Report, Environmental Inspection checklist
<b>MITIGATION MEASURES</b>			
Pre-Commencement of Works			

<p>Engage Specialist Environmental Consultant to undertake environmental protection oversight. Implement hygiene protocol as required for the closure works area (NSW Threatened Species Management Information Circular No.6 (April 2008)).</p> <p>Establish any controls necessary to prevent works from occurring outside the referral boundary.</p> <p>Temporary frog exclusion fencing will surround the Closure Works site and ensure GGBF habitat protected from unauthorised access prior to works commencing in those works areas or their parts.</p> <p>Conduct pre-clearance surveys by a qualified ecologist in week prior to works commencing in works areas or their parts.</p> <p>Apply erosion and sediment controls as per sensitive environments (Managing Urban Stormwater – Soils and Construction (Landcom 2004)) and complete and line permanent basins as per designs provided by the State.</p>	<p>CEMF (Jacobs 2018)– Appendix D Flora and Fauna Management Plan</p> <p>GGBF Management Plan (Golders 2010)</p>	<p>Project Manager, Site Supervisor, Environmental Consultant</p>	<p>Daily Frog Fence Check, GGBF Mortality Report, Environmental Inspection checklist</p>
<p>During Works</p>			
<p>Open excavations and storage areas are to be inspected regularly for the presence of fauna species</p>	<p>CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan</p> <p>GGBF Management Plan (Golders 2010)</p>	<p>Project Manager, Site Supervisor</p>	<p>Environmental Inspection checklist Daily Site Visual Inspection</p>
<p>Proposed hours of construction are to be maintained to restrict noise and light impacts on nocturnal fauna</p>		<p>Project Manager, Site Supervisor</p>	<p>Site Induction</p>
<p>Plant and equipment brought on to site must be cleaned and free of deleterious material, mud and other material that may harbour weed seeds</p>		<p>Project Manager, Site Supervisor</p>	<p>Site Induction</p>
<p>Utilise an onsite ecologist during construction to relocate any native fauna which may be displaced</p>		<p>Project Manager, Site Supervisor</p>	<p>Environmental Inspection checklist Daily Site Visual Inspection</p>
<p>Habitat features such as woody debris that may be utilised by fauna within the construction area would be retained and set-aside during the construction period for re-instatement at the completion of the works</p>		<p>Project Manager, Site Supervisor</p>	<p>Environmental Inspection checklist Daily Site Visual Inspection</p>
<p>No night works are permitted without additional assessment of potential noise and light impacts</p>		<p>Project Manager, Site Supervisor</p>	<p>Site Induction</p>

<p>GGBF impact avoidance is to be based on the following:</p> <ul style="list-style-type: none"> <li>▪ Establishment and use of Chytrid Hygiene procedures such that the Chytrid fungus is not brought to site or transferred between area's of the site,</li> <li>▪ Appropriate levels of GGBF pre-clearance/disturbance surveys and relocation to ensure to the extent possible that direct disturbance area's are free of GGBF on the commencement of works in each area,</li> <li>▪ Establishment of GGBF exclusion fencing such that the risk of GGBF re-entering the area is prevented,</li> <li>▪ Establishment of clear boundaries of works areas such that unnecessary disturbance is avoided, particularly adjacent to existing ponds,</li> </ul>	<p>CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan</p> <p>GGBF Management Plan (Golders 2010)</p>	<p>Ecologist, Project Manager, Site Supervisor</p>	<p>Ecologist Pre-clearance survey, Site Induction, Environmental Inspection checklist</p>
<p>A Chytrid Hygiene procedure in accordance with the NSW Threatened Species Management Information Circular No.6 – Service Hygiene Protocol for the Control of Disease in Frogs (April (2008) or most recent revision of that document, must be implemented on site during all works and any other activities undertaken as part of the action. This procedure is to include:</p> <ul style="list-style-type: none"> <li>▪ Dedicated disinfection bays established at site entry and all vehicles required to enter via this bay;</li> <li>▪ All disinfection processes will be monitored and controlled at the Closure Works entry point;</li> <li>▪ The location of these disinfection bays, and the obligations of disinfection, will be communicated during the site induction and training;</li> <li>▪ Cleaning and disinfection of workers boots upon entry and exit from the site;</li> <li>▪ Procedures will be implemented to inspect mobile plant entering the Project site during construction activities to control soil and/or organic matter and to disinfect tyres and wheels of vehicles entering the Project site; and</li> <li>▪ Vehicles arriving at site muddy will be sent away for more intensive cleaning prior to disinfection.</li> </ul>	<p>CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan</p>	<p>Project Manager, Site Supervisor</p>	<p>Site Induction, Environmental Inspection checklist</p>
<p>Show that suitable risk assessment has been undertaken by an appropriately qualified and experienced ecologist on all imported capping and revegetation materials to demonstrate that it contains a low risk of containing Chytrid. Risk assessment should consider as a minimum:</p> <ul style="list-style-type: none"> <li>▪ Material not sourced from known, suspected or likely amphibian habitat areas;</li> <li>▪ Material unlikely to have had contact with amphibians and no amphibians present in material; and</li> </ul>	<p>CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan</p>	<p>Geotechnical &amp; Environmental Consultant, Ecologist Project Manager, Site Supervisor</p>	<p>Ecologist Pre-clearance survey, Site Induction, Environmental Inspection checklist</p>

<ul style="list-style-type: none"> <li>▪ Material stored in a dry location prior to transport.</li> </ul>			
<p>Pre-clearance survey and clearing methodology will be implemented such that it minimises potential harm to GGBF species. The survey methodology will give consideration to the following factors:</p> <ul style="list-style-type: none"> <li>▪ Level of effort warranted in different areas and habitats;</li> <li>▪ Seasonal factors on GGBF use of habitat; and</li> <li>▪ Need for night time surveys.</li> <li>▪ Survey effort required is likely to include:             <ul style="list-style-type: none"> <li>○ Targeted active searches of potential GGBF habitat located within the disturbance footprint;</li> <li>○ Conducted to minimise disruption of breeding activities: relocated tadpoles or metamorphs;</li> </ul> </li> <li>▪ Be conducted in accordance with hygiene protocol;</li> <li>▪ Habitat resources including all wet areas as well as rocks, logs, tussock forming vegetation, and other cover will be searched during diurnal visual inspections.</li> <li>▪ A nocturnal habitat search including visual search, spotlighting and call playback may be conducted to assess nocturnal use (breeding/calling) in the habitat supported in disturbance area, if the surveys are conducted during core breeding season (spring/summer);</li> <li>▪ Any GGBF observed within the disturbance footprint will be relocated in accordance with relocation procedure provided in the GGBF Management Plan prior to commencement of disturbance; and</li> <li>▪ The survey methodology implemented should allow the qualified and experienced ecologist to confirm that the risk of GGBF mortality has been reduced to the extent reasonable and feasible for the applicable habitat type/area.</li> </ul> <p>The clearing methodology should include the following:</p> <ul style="list-style-type: none"> <li>▪ Consideration of most appropriate time to install frog exclusion fences;</li> <li>▪ Presence of an appropriately qualified and experienced ecologists during clearing;</li> <li>▪ Gradual degradation of higher risk habitat areas progressing from areas furthest away from pond towards areas of refuge;</li> <li>▪ Relocation of cleared vegetation to areas away from immediate works that</li> </ul>	<p>CEMF (Jacobs 2018)– Appendix D Flora and Fauna Management Plan</p> <p>GGBF Management Plan (Golders 2010)</p>	<p>Ecologist Project Manager,</p>	<p>Ecologist Pre-clearance survey, Site Induction, Environmental Inspection checklist</p>

<p>allow remaining amphibians to escape; and</p> <ul style="list-style-type: none"> <li>▪ Ability to open amphibian fences during clearing at key times to allow fauna to escape.</li> </ul>			
<p>If any frog specimens thought to be a GGBF are observed and are within project disturbance area the following relocation procedure will be implemented:</p> <ul style="list-style-type: none"> <li>▪ Observer to notify Site supervisor who in turn is to notify the HDC, a suitably qualified ecologist, and the Contractor's supervisor of the frog's location immediately;</li> <li>▪ Contractor supervisor to halt work in the immediate vicinity to prevent accidental interaction with the frog;</li> <li>▪ The ecologist or HDC's environmental representative will determine whether the frog is likely to be harmed by works or is likely to migrate to an area that it could be harmed;</li> <li>▪ If likely to be harmed by works the GGBF will be captured by the ecologist or suitably trained frog handler following GGBF handling and Hygiene procedures;</li> <li>▪ A one frog per bag policy will be observed with disinfection of all equipment undertaken immediately following any contact with frogs of any description;</li> <li>▪ If healthy, the frog will be held in a cool, dark, moist place until nightfall before being released to a suitable location in the immediate vicinity of capture but outside the disturbance footprint;</li> <li>▪ GGBF showing Chytrid symptoms and deemed unlikely to survive transportation will be euthanized and preserved prior to dispatch to a designated sick or dead frog recipient in accordance with Appendix 2 of the National Parks and Wildlife Service's Hygiene protocol for the control of disease in frogs (NPWS, 2008);</li> <li>▪ If deemed likely to survive transportation GGBF will be placed in a damp cloth bag or partially inflated plastic bag with leaf litter;</li> <li>▪ Dead frogs will be preserved in accordance with the approved GGBF management plan including cutting open stomach and preserving in 10 times the volume of the specimen of 65% ethonol or 10% buffered formalin</li> <li>▪ The designated sick or dead frog recipient will be contacted prior to</li> </ul>	<p>CEMF (Jacobs 2018)– Appendix D Flora and Fauna Management Plan</p> <p>GGBF Management Plan (Golders 2010)</p>	<p>Ecologist Project Manager, ENV Manager</p>	<p>Ecologist Pre-clearance survey, Site Induction, Environmental Inspection checklist</p>

<p>transport to confirm appropriate procedures;</p> <ul style="list-style-type: none"> <li>▪ Containers used for storing frogs will be labelled with date, location and species if known; and</li> <li>▪ A standardised collection form must be completed and a copy sent with the specimen.</li> </ul>			
<b>Post Completion of Works</b>			
<p>Upon completion of works all site security fencing, frog exclusion fencing shall be removed as necessary</p>		<p>Ecologist Project Manager, ENV Manager</p>	<p>Environmental Inspection checklist</p>

### 5.7.4 USE OF PESTICIDES & HERBICIDES

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
<p>Implementation of GGBF risk consideration to all decision making such that unintended consequences to GGBF can be avoided. This includes considering suitability of imported materials from a Chytrid risk and nutrient perspective and use of chemicals including flocculants, herbicides and pesticides</p>	<p>CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan</p>	<p>Project Manager, Site Supervisor</p>	<p>Site Induction</p>

## 5.8 HERITAGE

### 5.8.1 ABORIGINAL HERITAGE

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVES</b>			
<p>To ensure that undiscovered heritage and archaeological items are protected from construction activities.</p>	<p>CEMF (Jacobs 2018) – Appendix J Heritage Management Plan</p>	<p>Project Manager, Site Supervisor</p>	<p>Site Induction</p>
<b>TARGETS</b>			
<p>Unknown or undocumented heritage sites are not knowingly destroyed, defaced or damaged. Identify and protect any new artefacts or heritage sites before any harm can take place.</p>	<p>CEMF (Jacobs 2018) – Appendix J Heritage Management Plan</p>	<p>Project Manager, Site Supervisor</p>	<p>Site Induction</p>
<b>MITIGATION MEASURES</b>			
<b>Pre-Commencement of Works</b>			

<p>No known heritage items or area's have been identified within the project site or surrounds. As such, heritage mitigation measures are limited to restricting access beyond the project boundary and the implementation of an "unexpected finds" procedure IM-PRO-0504-002 (Appendix 4)</p>	<p>CEMF (Jacobs 2018) – Appendix J Heritage Management</p>	<p>Project Manager, ENV Manager</p>	<p>Unexpected finds procedure, Site Induction</p>
<p>During Works</p>			
<p>In the event that potential Aboriginal and Historic heritage items are discovered the following steps must be undertaken:</p> <ul style="list-style-type: none"> <li>▪ STOP ALL WORK in the vicinity of the find and immediately notify the Project Manager, Site Supervisor and Environmental Manager,</li> <li>▪ Contact HCCDC and the PAP to notify them of the find as soon as possible,</li> <li>▪ In the event of uncovering remains that are potentially human, the NSW police are also to be contacted immediately,</li> <li>▪ Record the details and take non-intrusive photos of the find and relay the information to HCCDC and their PAP,</li> <li>▪ HCCDC will contact a qualified archaeologist to get advice regarding the nature and potential significance of the find,</li> <li>▪ If the qualified archaeologist advises that the find is not a potential heritage item, work will recommence in consultation with HCCDC,</li> <li>▪ If the qualified archaeologist advises that the find is a potential heritage item HCCDC will contact and notify the relevant authority; and</li> <li>▪ Work is not to recommence in the area of the identified find until clearance is received from HCCDC</li> </ul>	<p>CEMF (Jacobs 2018) – Appendix J Heritage Management</p>	<p>Project Manager, Site Supervisor</p>	<p>Ongoing visual inspections,</p>

### 5.8.2 NON-ABORIGINAL HERITAGE

Safeguards	Source	Responsible Position	Output
<p>MITIGATION MEASURES</p>			
<p>Pre-Commencement of Works</p>			
<p>No known heritage items or area's have been identified within the project site or surrounds. As such, heritage mitigation measures are limited to restricting access beyond the project boundary and the implementation of an "unexpected finds" procedure</p>	<p>CEMF (Jacobs 2018) – Appendix J Heritage Management</p>	<p>Project Manager, ENV Manager</p>	<p>Unexpected finds procedure, Site Induction</p>
<p>During Works</p>			
<p>In the event that potential Historic heritage items are discovered the following steps must be undertaken:</p> <ul style="list-style-type: none"> <li>▪ STOP ALL WORK in the vicinity of the find and immediately notify the Project Manager, Site Supervisor and Environmental Manager,</li> <li>▪ Contact HCCDC and the PAP to notify them of the find as soon as possible,</li> </ul>	<p>CEMF (Jacobs 2018) – Appendix J Heritage Management</p>	<p>Project Manager, Site Supervisor</p>	<p>Ongoing visual inspections,</p>

<ul style="list-style-type: none"> <li>▪ In the event of uncovering remains that are potentially human, the NSW police are also to be contacted immediately,</li> <li>▪ Record the details and take non-intrusive photos of the find and relay the information to HCCDC and their PAP,</li> <li>▪ HCCDC will contact a qualified archaeologist to get advice regarding the nature and potential significance of the find,</li> <li>▪ If the qualified archaeologist advises that the find is not a potential heritage item, work will recommence in consultation with HCCDC,</li> <li>▪ If the qualified archaeologist advises that the find is a potential heritage item HCCDC will contact and notify the relevant authority; and</li> <li>▪ Work is not to recommence in the area of the identified find until clearance is received from HCCDC</li> </ul>			
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## 5.9 WASTE MANAGEMENT AND RESOURCE RECOVERY

Safeguards	Source	Responsible Position	Output
<b>MITIGATION MEASURES</b>			
Pre-Commencement of Works			
Waste minimisation and management measures will be implemented including: <ul style="list-style-type: none"> <li>▪ Recycling and diverting from landfill surplus soil, rock, and other excavate or demolition materials wherever practical,</li> <li>▪ Separately collecting and streaming quantities of waste concrete, bricks, blocks, timber, metals, plasterboard, paper and packaging, glass and plastics and offering them for recycling where possible</li> </ul>	Prelims Specification 6.3	Project Manager Site Supervisor	Daily prestart, Environmental Inspection checklist Daily Site Visual Inspection
During Works			
Avoid rubbish and other waste build up to deter feral animals	CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan	Site Supervisor	Daily prestart, Environmental Inspection checklist Daily Site Visual Inspection
A waste register will be maintained during the works and submit a progress report every 2 months	Prelims Specification 6.3	Project Manager Site Supervisor	B-monthly reporting
All other contaminated materials will be managed on site in accordance with the MMP.	CEMF (Jacobs 2018) – Appendix C Materials Management Plan	Project Manager Site Supervisor	



Post Completion of Works			
All waste to be removed at the completion of the works	CEMF (Jacobs 2018) – Appendix B Environmental Obligation Interface Plan	Project Manager Site Supervisor	

## 5.10 WORK IN ENVIRONMENTALLY SENSITIVE AREAS

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
No sensitive area's have been identified onsite			

## 5.11 ENVIRONMENTAL INCIDENT AND REPORTING

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Incidents will be classified, managed and reported as per the requirements of Daracon's Incident Reporting and Investigation Management Procedure IM-PRO-0306-01 (Appendix 3)	IM-PRO-0306-01	Project Manager, Site Supervisor	IM-REP-1407-003

## 5.12 SITE FACILITIES

Safeguards	Source	Responsible Position	Output
MITIGATION MEASURES			
Pre-Commencement of Works			
Lighting of site compounds if required for safety and security , will avoid light spill outside of the construction works footprint and will be undertaken in accordance with the Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting	CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor	

## 5.13 TRAFFIC MANAGEMENT

Safeguards	Source	Responsible Position	Output
OBJECTIVES			
To ensure that additional traffic from construction activities does not cause an environmental nuisance.	CEMF (Jacobs 2018) – Appendix G Traffic Management	Project Manager, Site Supervisor	Induction
TARGETS			

No valid complaints resulting from congestion from construction traffic Comply with traffic management standards	CEMF (Jacobs 2018) – Appendix G Traffic Management	Project Manager, Site Supervisor	Induction
<b>MITIGATION MEASURES</b>			
During Works			
Worksite speed limits will be determined and for areas of the site based on road type, road condition and adjacent work activity. Normal road rules apply unless stated otherwise. Site induction completed by all site personnel to specify appropriate traffic movements onsite. Water cart used where possible to minimise generation of dust from surfaces.	CEMF (Jacobs 2018) – Appendix G Traffic Management	Project Manager, Site Supervisor	Induction

## 5.14 RESTORATION OF SITE

Safeguards	Source	Responsible Position	Output
<b>OBJECTIVES</b>			
To comply with State and Commonwealth approvals requirements and related conditions. To provide a post construction environment that is revegetated to stabilise the capping surface; and planted with species known to be favoured by GGBF.	CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan	Project Manager, Site Supervisor	Site Induction, Daily prestart and toolbox,
<b>TARGETS</b>			
The capped surface is stabilised and vegetated within 12 months of construction completion. Provide a revegetated capped surface that includes species of flora known to be favoured by GGBF.	CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan	Project Manager, Site Supervisor	Site Induction, Daily prestart and toolbox,
<b>MITIGATION MEASURES</b>			
Post Completion of Works			
Rehabilitation using species preferred by GGBF	CEMF (Jacobs 2018) – Appendix D Flora and Fauna Management Plan	Project Manager, Site Supervisor	
Works associated with the closure of the KIWEF must only occur within the closure works area (project footprint); and must be restricted to the extent required to satisfy the Surrender Notice requirements. All disturbed surfaces will be revegetated within 1 month of final land forming and in compliance with the landscaping plans	CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan	Project Manager, Site Supervisor	Site Induction, Daily prestart and toolbox,

<p>Topsoil to be used for surface layers must be sourced from within KIWEF to the extent possible and will otherwise be assessed as low in nutrients and having a low risk of containing Chytrid Fungus to be protective of adjacent MNES habitat.</p> <p>Upon completion of works, the works area will be rehabilitated with vegetation species known to be favoured by GGBF.</p> <p>Open stormwater infrastructure across the KWIEF site will be planted with species known to be favoured by GGBF. This revegetation and rehabilitation strategy will include a 2m wide buffer on either side of the stormwater drains. The intention is to provide movement corridors for GGBF across the site.</p> <p>Drainage culverts will, where practicable, be vegetated and lined with rocks and objects that may provide temporary frog refuge, in the event that a frog seeks to traverse the future capped area of KIWEF.</p> <p>Habitat features such as woody debris that may be utilised by fauna within the construction area would be retained and set-aside during the construction period for reinstatement at completion of works.</p> <p>Prior to the Construction Completion dates the Contractor is required to seed the vegetation layer above the capping layer and reseed areas where sparse vegetation coverage is achieved by the end of the care and maintenance period.</p>	<p>CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan</p>	<p>Project Manager, Site Supervisor</p>	<p>Site Induction, Daily prestart and toolbox, Environmental Inspection checklist</p>
<p>Aquatic vegetation:</p> <ul style="list-style-type: none"> <li>▪ Selection of reeds that provide good habitat cover such as Typha, Bolboschoenus, Phragmites, and Juncus;</li> <li>▪ A mixed community is preferable to single species stands;</li> <li>▪ GGBF prefer wetlands with sections of open water. Water depth should be deep enough to prevent Typha spreading across the entire pond area; the reeds should be mainly at the edge of ponds;</li> </ul> <p>Substrate at edges should be suitable for reed growth (i.e. not too many pebbles, sandbags, etc.);</p> <ul style="list-style-type: none"> <li>▪ Areas of low blanketing vegetation are also desirable for GGBF breeding, for example, Paspalum grass and Shoenoplectus rush;</li> <li>▪ Establishing aquatic plants with planting after Closure Works: will maximise structural suitability of wetland to immigrating GGBF as soon as construction is completed.</li> </ul> <p><u>Terrestrial vegetation:</u></p> <ul style="list-style-type: none"> <li>▪ Stabilise new works with sterile millet (or other suitable cover crop);</li> <li>▪ Retain seed bank in fill taken from site (to be reused);</li> <li>▪ Avoid large tree species (as roots may potentially compromise the cap);</li> </ul> <p>Allow terrestrial species to re-colonise Drainage culverts will, where practicable, be vegetated and lined with rocks and objects that may provide</p>	<p>CEMF (Jacobs 2018) – Appendix E Revegetation Management Plan</p>	<p>Project Manager, Site Supervisor</p>	<p>Daily prestart and toolbox, Environmental Inspection checklist</p>

temporary frog refuge, in the event that a frog seeks to traverse the future capped area of KIWEF.			
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## 6 ACCOUNTABILITY

### 6.1 MANAGING DIRECTOR

The Managing Director shall ensure that all resources needed to fulfil the requirements outlined within this plan are made available. The Managing Director shall hold all relevant managers accountable to implement and monitor all applicable requirements within this Sub-Plan.

### 6.2 MANAGER RESPONSIBLE FOR DARACON GROUP SYSTEMS

The Manager responsible for Daracon Group Systems shall ensure that the requirements of this plan are effectively implemented. This shall be completed by implementing adequate review and monitoring processes to ensure compliance with this Sub-Plan.

### 6.3 GENERAL AND DIVISIONAL MANAGERS

Senior Management (*General and Divisional Managers*) are required to have a strong understanding of the requirements of this Plan applicable to their projects. They are to ensure requirements outlined within are effectively implemented and monitored across all their responsible operational areas of the business.

### 6.4 SITE MANAGEMENT PERSONNEL

Site Management Personnel are required to have a strong understanding of the requirements in this Plan to ensure effective implementation on the project. Site Management must hold all workers on this project accountable to follow and work in accordance with this Sub-Plan.

### 6.5 ENVIRONMENTAL SITE REPRESENTATIVE (ESR)

The Environmental Site Representative (ESR) nominated in the Organisation Chart in Appendix 1 of the IPMP will be suitably qualified and is responsible to ensure the onsite matters relating to Environmental Management are implemented effectively and as per regulatory requirements and contractual specifications.

### 6.6 ENVIRONMENTAL MANAGEMENT REPRESENTATIVE (EMR)

The Environmental Management Representative (EMR) will be located offsite for the duration of the project however will have the overall responsibility to ensure that the Environmental Site Representative is held accountable to ensure the onsite matters relating to Environmental Management are implemented effectively and as per regulatory requirements and RMS specifications.

The EMR will attend site from time to time to assist the project team relating to Environmental Management on the project and will be available via phone and email.

## 6.7 DARACON WORKERS

All Daracon workers shall fully comply with the requirements of this Sub-Plan.

## 6.8 SUBCONTRACTORS

Where Subcontractors are working under the Daracon Management System on this project, all Subcontractors and their workers shall fully comply with the requirements of this Sub-Plan.

## 7 DEFINITIONS

All terms referenced within this plan are included within [REG.00001](#) *Definitions & Glossary of Terms Register*.

## 8 ASSOCIATED DOCUMENTS AND PROCEDURES

Approved Forms, Process Flowcharts, Registers and/or other documents referenced within the body of, or those that are associated with this plan, are accessible and made available for all Daracon personnel via the following link: <http://dms/cs/login/login.htm>.

**APPENDIX 1 Achieving Environmental Targets and Objectives**

**APPENDIX 2 Sample Monitoring Records**

**APPENDIX 3 Incident Reporting and Investigation Procedure**

**APPENDIX 4 Unexpected Finds Procedure**

