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# NEOEN Solar Farm Project

## Soil and Water Management Plan

Doc ID: PL-EV-04

Rev No.: 2

Rev Date: 18/04/2017



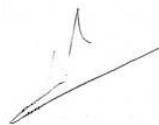
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# 1 INTRODUCTION

## 1.1 Purpose

The purpose of this Soil and Water Management Plan (SWMP) is to provide a strategy to control soil and water related impacts during construction in the Parkes Solar Farm project.

The aim of this Plan is to comply with all statutory requirements and implement all environmental controls listed in this SWMP to ensure that construction activities that have the potential to impact on soil and water are controlled to avoid degradation of the environment.

## 1.2 Document Responsibilities

Responsibility	Role
Development	Environmental Manager
Review	Project Manager
Approval	Project Director

Any person may request updating of this Plan.

## 1.3 Document Amendment and Distribution

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

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 *Revision Status Section* 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.

### 1.3.1 Revision Status

Revision	Revision Date	Issued Date	Nature of modification
0	2016/11/21	2016/11/21	Contract Award revision
1	2017/02/10		

2	18/04/2017		
3			
4			
5			
6			
7			

## 2 DEFINITIONS

<b>BYCA</b>	Bouygues Construction Australia Pty Ltd
<b>EMP</b>	Environmental Management Plan (PL-EV-01)
<b>SWMP</b>	Soil and Water Management Plan (PL-EV-04)

## 3 ORGANISATION

### 3.1 Responsibilities and Authorities

The Project Organisational chart and overall roles and responsibilities are outlined in the Project EMP. The key responsibilities for Soil and Water Management are as follows:

#### 3.1.1 Project Manager

- Ensuring appropriate resources are available for the implementation of this plan
- The Project Manager is responsible for obtaining client approval in accordance with Contract conditions

#### 3.1.2 HSE Coordinator

In relation to Soil and Water management, the HSE coordinator is responsible for:

- The HSE coordinator is responsible for reviewing the SWMP to ensure it meets Contract conditions and other Stakeholder requirements
- Providing assistance and advice to the Project Engineers and Environmental Coordinators to fulfil the requirements of this Plan, assessing data from inspections, monitoring and reporting, and providing project-wide advice to ensure consistent approach and outcomes are achieved
- Ensuring data is collected/reported and associated records maintained (e.g. delivery/waste dockets)
- Ensure that the workforce identify, analyse and treat the risks before commencing works each day and ensure that the appropriate controls are implemented and effective; thus controls may be increased or decreased as required
- Reviewing weather forecasts and current weather observations
- Maintaining sediment and erosion controls on a weekly basis, or daily during and immediately after rainfall

- In the event that a complaint is received, to conduct an investigation to determine the potential parameters of influence and assess that all control measures are effective
- The HSE coordinator is also responsible for the review and update of this Plan

### **3.1.3 General Superintendent**

- Identifying, analysing and treating the risks before commencing works each day and ensuring that the appropriate controls are implemented and effective; thus controls may be increased or decreased as required
- Reviewing weather forecasts and current weather observations
- Maintaining sediment and erosion controls on a weekly basis, or daily during and immediately after rainfall

### **3.1.4 All Workers on Site**

In relation to Soil and Water management, all workers on site are required to:

- Implement and maintain all applicable control measures
- Report any potential and/or actual incidence of sediment/erosion
- Report any potential incident that could contaminate water bodies

## **4 APPLICABLE REQUIREMENTS**

### **4.1 Legal Requirements**

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

- Protection of the Environment Operations Act 1997
- Environmental Planning and Assessment Act 1979
- Environmental Planning and Assessment Regulation 2000
- Contaminated Land Management Act 1997
- Soil Conservation Act 1938
- Water Management Act 2000
- Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition (Landcom 2004) (Blue Book)
- Department of Environment and Climate Change NSW, 2008, Managing Urban Stormwater: Soils and Construction – Volume 2A Installation of Services
- NSW State Groundwater Quality Protection Policy (Department of Land & Water Conservation 1998)
- Bunding and Spoil Management (EPA 1997)
- ANZECC (2000) Australian and New Zealand Guidelines for Water Quality Monitoring and Reporting (collectively known as the “ANZECC Guidelines”)

## 4.2 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

### **Parkes & Griffith**

- The development is to be carried out in accordance with OEH's Managing Urban Stormwater: Soils and Construction (Landcom, 2004) manual.
- The Applicant shall ensure that the development does not cause any water pollution, as defined under Section 120 of the POEO Act.
- Following any construction or upgrading on site, the Applicant shall:
  - (a) restore the ground cover of the site as soon as practicable, using suitable species;
  - (b) maintain ground cover; and
  - (c) keep this ground cover free of weeds.

### **South Keswick**

- Minor earthworks will be required to be undertaken for the construction of the development. Such works are considered minor with no erosion or sediment control plans required to be implemented. Upon completion of the development erosion is not considered to be an adverse consequence.

### **Narromine**

- A Soil and Water Management Plan must be provided to Council which details both construction and operation stages of the development. All measures intended to reduce soil erosion and manage water throughout the site are to be implemented prior to construction works commencing.
- Runoff from rainfall events up to and including the 5 year ARI event must be contained on site. Controlled runoff measures are to be provided on site for a 1 in 100 year ARI event within overland flow paths. A plan showing how this will be achieved is to be submitted prior to commencement of construction.
- Soil and erosion control measures are to be established and maintained during the construction phase. These are to be done in accordance with the following:
  - Landcomm, March 2004, Managing Urban Stormwater: Soils and Construction Volume 1 - 4th Edition
  - Department of Environment and Climate Change NSW, 2008, Managing Urban Stormwater: Soils and Construction - Volume 2A Installation of services

## 5 COMPETENCE, TRAINING AND AWARENESS

As stated in the EMP all project personnel, subcontractors and consultants will receive training in the group and personal environmental obligations during the *Site Inductions* and *Toolbox Talks*. From

time-to-time staff may also attend specific training sessions, when necessary, by the HSE coordinator.

Examples of topics that will be covered during project induction and toolboxes include:

- Sediment and erosion controls measures
- Stormwater pollution prevention
- Floods and contingency measures
- Protection of groundwater system

## 6 SOIL AND WATER MANAGEMENT

### 6.1 Objectives

The environmental objectives with regard to Soil and Water Management during the construction phase are:

#### 6.1.1 Surface Water

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

#### 6.1.2 Groundwater

Groundwater management objectives are as follows:

- Maintenance and protection of the quality and useability of groundwater within the underlying groundwater system
- Minimisation and management of potential impacts to the quality of surface water and groundwater resources caused by the Construction work
- Maximisation of the efficient use of water for the Project

#### 6.1.3 Soil

The soil and erosion management objectives are:

- To reduce the potential for erosion and subsequent sedimentation
- Ensure that stockpiles are managed effectively to minimize any sediment run off



## **6.2 Potential Environmental Impacts**

### **6.2.1 Surface Water**

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

### **6.2.2 Groundwater**

No Groundwater Dependent Ecosystems are known to occur within the proposal sites. As the Proposal would not alter existing groundwater supplies within the solar farm site, it is considered that impacts to Groundwater Dependent Ecosystems (GDE) are not likely to result from the Proposal. Furthermore, the Proposal is not predicted to have any impact on any High Priority GDEs listed in the relevant WSPs given their distance from the proposal site.

### **6.2.3 Soil**

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
- Sedimentation of creeks, swamps and low lying areas
- 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

Erosion and sedimentation impacts associated with soil disturbance from construction activities can be minimised by undertaking works in accordance with provisions of the Managing Urban Stormwater: Soils and Construction series, in particular:

- Managing Urban Stormwater: Soils and Construction, Volume 1, 4th edition (Landcom 2004), known as 'the Blue Book'
- Volume 2A Installation of Services (DECC 2008a)
- Volume 2C Unsealed Roads (DECC 2008b)

### 6.3 Management and Contingency Mitigation Measures

Management and contingency mitigation measures (including the erosion and sediment control plan) will be carried out in accordance with the Soil and Water Management Plan prepared for each site by SMEC. These are located in the following:

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

**\*The Plans prepared by SMEC under AUDITS state:**

*In accordance with the Best Practice Erosion and Sediment Control Guidelines (IECA 2008), audits are to be conducted at intervals of not more than one (1) calendar month commencing from the day of site disturbance until all disturbed areas have been adequately stabilised against erosion to the acceptance of the relevant regulatory authority. Such audits must be:*

- *Undertaken by a person suitably qualified and experienced in ESC (i.e. CPESC) that can be verified by an independent third party (this person must not be an employee or agent of the principal contractor); and*
- *Conducted on the next business day following a rainfall event in which greater than 10mm of rainfall has been recorded by the Bureau of Meteorology rain gauge nearest to the site.*

In accordance with the Development Conditions for each site, Erosion and Sediment Control will be carried out in accordance with *Managing Stormwater: Soils and Construction* (Landcom, 2004). Under **Appendix M: Site Works** a self-auditing program will be established. This criterion will be met through the completion of site environmental inspections (FS-EV-AT-01) by the relevant HSE Coordinator or Site Engineer.

#### 6.3.1 Excavation and Removal of Uncontrolled Fill/Contaminated Soils

If any onsite excavation and removal of uncontrolled fill/contaminated soil to waste control facilities is required (not anticipated) it will be undertaken as follows:

- Uncontrolled fill areas will be surveyed and clearly marked by offset pegs
- Uncontrolled fill will be analysed to assess the level of contamination before excavation. The level of contamination will determine the procedures to be followed during excavation, haulage and placement
- The area will be heavily watered before the excavation of uncontrolled fill commences
- Uncontrolled fill will be directly loaded into semi-tipper road trucks
- All trucks will have and use tarpaulin covers
- Each truck will be issued with a docket detailing the level of contamination, the weight, the source of excavation and the destination of the exaction
- Each truck will pass over the wheel wash system before exiting the site
- Each truck will receive an official receipt from a licensed waste disposed facility detailing the tonnage and Class of material received

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- All volumes of uncontrolled fill will be documented and recorded
- All documentation will be received and collated by the project team and will be available for the State's representative to audit
- Wheel wash will be cleaned and emptied regularly to ensure correct wash down procedures are adhered to
- If asbestos or Asbestos Containing Material (ACM) is identified soils/material will be managed in accordance with procedures outlined in the Safety Management Plan (SMP).

### 6.3.2 Acid Sulphates Soils (ASS)

Acid sulphate soil is the common name for soils that contain metal sulphides. In an undisturbed and waterlogged state, these soils may pose no or low risk. However, when acid sulphate soils are disturbed or exposed and react with oxygen, they produce sulphuric acid which may be accompanied by certain hazards. Metals may be released from sediments and become bioavailable in the environment, oxygen may be removed from the water column and gases such as hydrogen sulphide, sulphur dioxide and methane may be released.

ASS runoff has significant environmental, economic and social impacts on coastal communities. Besides the obvious impacts on the environment such as fish kills, death of other aquatic organisms and decline of riparian and aquatic vegetation, acid runoff has been attributed to the decline or failure of agriculture, fishery and aquaculture industries. The ecological damage can also affect valuable tourist resources including fishing grounds, swimming areas and other water sports areas. Acid discharges can damage infrastructure services and structures such as pipes, foundations, drains, bridges and flood controls. High levels of iron and manganese may precipitate in receiving waters, causing aesthetic issues, staining infrastructure, coating aquatic vegetation and preventing photosynthesis or blocking the gills of aquatic fauna. High levels of some elements such as aluminium and arsenic may also have human health implications.

If ASS are present on site the following management measures shall be applied:

1. The disturbance of ASS should be avoided wherever possible. This is by far the best option, both economically and environmentally.
2. Where disturbance of ASS is unavoidable, preferred management strategies are: -
  - minimisation of disturbance
  - neutralisation
  - strategic reburial
3. Other management measures may be considered. All strategies must be subject to detailed technical assessment and must not pose unacceptably high risks to human health, the environment or infrastructure.
4. Where disturbance of acid sulphate soils is likely, a management plan is required for any works which may disturb the soil or groundwater. This plan should detail the technical feasibility of measures proposed to manage risks
5. Receiving waters (marine, estuarine, or fresh) shall not be used as a primary means of diluting and/or neutralising ASS or associated contaminated waters
6. Stockpiling of untreated ASS with or without containment is not an acceptable long-term management strategy. Soils that are to be stockpiled, placed as temporary or permanent

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cover on land or in waterways, sold or exported off the treatment site or used in earth bunds must be treated / managed to eliminate the short- and long-term risks of pollution.

The following issues should be considered when formulating ASS environmental management strategies:

- the sensitivity and environmental values of the receiving environment. This includes the conservation, protected or other relevant status of the receiving environment
- whether groundwaters and/or surface waters are likely to be directly or indirectly affected through overland flow or infiltration
- the heterogeneity, geochemical and textural properties of soils on-site; and
- the management and planning strategies of Local and/or State Government, including Catchment Management Plans/Strategies and Coastal Management Plans

### **6.3.3 Control of Other Potential Sources of Stormwater Pollution**

The following sections describe the control measures to be used at the Project construction site to prevent and/or minimise the contamination of stormwater from other potential sources of pollution on site. Details regarding the siting criteria, size, design, maintenance and operation of the nonhazardous and hazardous waste management areas can be found in the specific waste management plan.

#### **6.3.3.1 Concrete and Bitumen**

There are a few non-hazardous wastes generated from the pouring of concrete namely: discarded forms made of wood, cardboard, plastic or metal materials; waste or surplus concrete; and, rinse waste used to clean concrete handling tools.

Set or cured concrete or asphalt poses little risk to the environment unless it is cut or crushed. Any water that comes into contact with unset concrete, concrete fines, concrete dust or concrete washings becomes highly alkaline (i.e. it has a very high pH). This water will burn and kill all fish, aquatic insects and plants that come into contact with it.

The contaminated water cannot be diluted to a level that is safe for discharge to the receiving environment. If it enters the sea or a stream, it only spreads the contaminated water further. It would take at least 100,000 litres of clean water to dilute the concrete fines from a very small cutting job to a neutral pH (pH7).

Asphalt / bitumen rinse and cutting waste water contains large amounts of hydrocarbons (i.e. like petrol), which are very toxic to people, plants and animals. Hydrocarbons cannot be diluted to a level that is safe for discharge to the receiving environment.

On the event that concrete or bitumen works are to be performed on site the following guidelines will be applied:

- Do not undertake concrete or asphalt works if there is a chance of heavy showers or rain
- Disposable concrete forms will be collected and disposed as any other general construction waste. Excess or surplus concrete delivered for a pour will be returned to the concrete supplier or used in another area or pour if possible. Supply management and delivery schedules will be coordinated to minimise any surplus concrete from being delivered to the site

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- Rinse water (rinsate) from the cleaning of concrete handling tools will be held in a lined basin or tank until it can be reused for cleaning tools or used for curing concrete, or returned to the concrete supplier for reuse
- Hardened concrete waste will be hauled off-site to a concrete recycler; or, sent to a landfill for disposal if a suitable recycler cannot be found.
- Where possible, completely block off stormwater drains with drain plugs and use a submersible pump or vacuum truck to remove contaminated run off from the catchpit. If this is not practicable then careful sandbagging or bounding around the catchpit grate can be used as an alternative
- Minimise the amount of water used on site - as it means there is less to control
- Dust is created during dry concrete or asphalt cutting. Use saws that can have a vacuum attached to minimise the amount of dust
- Use a wet / dry vacuum, or vacuum truck for larger jobs, to collect all concrete or asphalt contaminated material or runoff on site. If this is not practical, then divert all run off to the construction pit or unsealed ground, away from surface water flow paths
- Use of a tarpaulin sheets under concrete pumps and delivery chutes should be used to capture any spills.
- Concrete trucks or concrete pumpers to wash out on designated wash area.

#### **6.3.3.2 Spoil Disposal**

Excess soils (non-contaminated) will be reused on site. Appropriate erosion control measures will be implemented for all soil stockpiles on the construction site.

#### **6.3.3.3 Sanitary Wastes**

Typically, construction sites utilise portable toilets and/or septic holding tanks to hold sanitary wastewater. The sanitary wastewater is periodically removed by vacuum truck, and disposed of at a domestic wastewater treatment works. Only licensed waste haulers will be utilised to service the septic holding systems on site.

#### **6.3.3.4 Dewatering Practices**

It may be necessary to conduct dewatering operations during the installation of underground utilities (e.g.: electrical conduits, telephone lines), excavating for structural foundations, water piping, sewer and stormwater piping, and excavation for installation of the sewer pump station. To minimise the entrainment and discharge of sediment-laden water, the following practices will be used when dewatering is necessary (sheet piling options will also be assessed):

- Intakes of pump hoses used to withdraw water from trenches or excavations will be elevated above the bottom of the trench/excavation to minimise pumping of sediment
- Locations for discharge of water will be visually inspected and approved by the HSE coordinator or designee
- The discharge should be directed to a containment structure, surrounded by silt fence to allow settlement of solids

- Under no circumstances will trench or excavation water be directly discharged onto exposed soil or into any surface water body
- Any dewatering of pits or other below-grade areas, where stormwater might temporarily accumulate before being fully developed, will be directed to a vegetated area
- If water must be discharged to the municipal stormwater collection system, necessary permits and/or approvals will be obtained prior to discharge
- Dewatering activities must be approved by HSE coordinator and a dewatering permit issued (FS-EV-AT-05).

#### **6.3.3.5 Stormwater Discharge**

Stormwater should be considered as a potential resource for reuse if possible. BYCA will capture stormwater within the Turkey Nest and where the water quality meets the water quality objectives for the site this water will be used for flushing, cooling water or dust suppression.

The excess stormwater within the construction area, after it has been effectively treated and reused will be discharged to a local government or Water Corporation main drainage system, where approved after consideration of flow capacity and water quality characteristics.

#### **6.3.3.6 Hazardous Substances**

Common hazardous materials that are typically used on site during the course of construction, or waste generated as a result of their use, may include (but are not limited to):

- Petroleum products and lubricants
- Solvents and thinners
- Acids and bases
- Waste oil (e.g.: hydraulic fluids)
- Used oil filters
- Paint wastes
- Batteries
- Welding rods

The subsections that follow address the storage of these materials and wastes and other procedures for their careful handling to prevent or minimise contamination of stormwater from the construction site.

Specific materials to be used will vary depending upon the scope and phase of work.

Please refer to the *PR-HS-04 Hazardous Substances Procedure*.

#### **6.3.3.7 Material Storage Areas**

On site storage areas for hazardous substances (new materials for use in construction) will be designed and maintained to prevent and/or minimise any contact with stormwater. Containers of hazardous substances will be kept closed at all times when filling or dispensing product and materials will be kept in their original shipping containers until used.

Designated storage areas will be designed with an underlying impermeable surface (e.g.: concrete or plastic lining) surrounded by curbing, dikes or other means to prevent their release into the environment (self-bounded containers will also be assessed).

#### **6.3.3.8 Waste Storage for Disposal Areas**

The Project site will have designated storage areas, for the temporary storage of containerised wastes (and oil destined for offsite recycling) generated during the course of construction activities.

Containers of hazardous wastes will be kept closed at all times except when filling.

The temporary storage area will be under the control of the site construction contractor and all wastes placed in this area must be cleared prior to being transferred. Similarly, contractors with the need will be allowed to temporarily retain hazardous wastes on site in Satellite Accumulation Areas immediately adjacent to their primary work locations for the limited storage (time and amount) of hazardous waste generated during their work activities.

Both the storage area and any Satellite Accumulation Areas will be designed with a roof (or equivalent) and an underlying impermeable surface surrounded by secondary containment to minimise the mixing of waste with stormwater and to prevent the direct release of liquid wastes to the environment.

#### **6.3.3.9 Vehicles and Equipment Operations**

Vehicle maintenance will typically be performed in designated areas on the construction site. These areas will be located away from stormwater drainage pathways and offsite water courses in order to minimise the potential for stormwater pollution. A roving maintenance truck will also be used to perform routine refuelling and maintenance activities (e.g.: oil, lubricant and coolant changes, filter changes) on vehicles and equipment at their work location on the Project site.

Standard Operating Procedures on site will require that all used or spent fluids resulting from these maintenance activities be collected in sealed, marked containers and transferred to the storage area for temporary storage prior to recycling or disposal off site at a licensed facility. Furthermore, authorised personnel responsible for performing this type of maintenance will be required to ensure that they have access to spill clean-up materials prior to beginning these activities.

Similarly, the roving maintenance truck will be equipped with a spill kit (e.g.: pads, absorbents) and the used oil, lubricants and collected in closed containers to further minimise the potential for spills to the environment. The truck operator will be knowledgeable about conducting refuelling and maintenance activities in accordance with standards spill prevention practices, including performing these activities only in locations that do not pose a significant risk to on or off-site environmentally sensitive areas.

#### **6.3.3.10 Stockpiling of Contaminated Soils**

Potentially contaminated soils will be located away from surface water channels and conduits. Stockpiles will remain protected from surface runoff with plastic sheeting cover, and sandbags to prevent the spread of contamination during a storm event.

#### **6.3.3.11 Spill Response**

All site personnel will be informed that in the event hazardous substances are spilled onto the ground, they are to immediately contact the HSE Coordinator to initiate proper clean-up response



activities. In the event of a spill, site personnel will be required to prevent further spillage, contain the spill, and begin clean-up when directed.

## 7 IMPLEMENT CONTROLS

### 7.1 *Soil and Water Management Control Measures*

Environmental risk control measures and responsibilities for identified actions to minimise and mitigate Soil and Water impacts during construction are outlined in Table 1 - Soil and Water Mitigation Measures below.

**Table 1 - Soil and Water Mitigation Measures**

Source/Reference			
Mitigation Measure	Responsibility	Timing	Records
Incorporate discussion on Soil and Water measures into Site Induction.	HSE Coordinator	Pre-Construction	Project Site Induction
Establish and seek approval (if required) for detailed sedimentation basins and appropriate water runoff controls – both temporary during construction and permanent post construction.	HSE Coordinator/ Project Manager	Pre-Construction	Plan to be submitted to Council prior to commencement
Establish all appropriate water controls, including sediment basins, diversion drains etc.	HSE Coordinator	As required	FS-EV-AT-01 Environmental Inspection
Ensure all stormwater collection points are protected with sediment and erosion controls as appropriate for the site	HSE Coordinator	Ongoing	FS-EV-AT-01 Environmental Inspection
Inspect and maintain sediment controls	HSE Coordinator	Weekly and following a significant	FS-EV-AT-01 Environmental Inspection
		rainfall event	
<b>Stockpiles management</b> Sediment fences will be installed prior to stockpiling material Stockpiles that are proposed to be at a location for an extended period of time will be seeded to stabilise the surface and minimise sediment runoff and wind erosion. Stockpiles are not to be placed inside vegetation protection areas or within drip zones of retained trees. Stockpiles are not to be located near watercourses.	HSE Coordinator	Ongoing	FS-EV-AT-01 Environmental Inspection
<b>Unsealed Road/Surface Management</b> Unsealed surfaces will be wetted down with a water cart. Runoff from unsealed surfaces will be directed towards site drainage structures such as catch drains and sediment basins.	HSE Coordinator	Ongoing	FS-EV-AT-01 Environmental Inspection



Wastewater from site amenities to be removed by a licensed waste subcontractor and disposed of at an appropriate facility.	Subcontractor	Ongoing	FS-EV-RG-01 Waste Register
Vehicle wash-down areas will be located 20-50m away from watercourses.	HSE Coordinator / General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Dewatering within the construction site will be discharged to a construction sediment basin. Where this is not appropriate, dewatering can be discharged onto vegetated areas 50m away from any waterway or drainage line.	HSE Coordinator / General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
All water captured in the construction sediment basins will be allowed to settle before being discharged as clear water into a waterway or drainage line. If the water is not clear, it cannot be discharged. Where required sediment basins may be treated with a flocculent to reduce turbidity and settle suspended sediments.	HSE Coordinator / General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
When releasing captured water from the sediment basins it must be clear. If it is not clear it is not to be pumped.	HSE Coordinator / General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Sediment basins will be maintained to ensure that the amount of accumulated sediment does not exceed 60% of the sediment storage area.	HSE Coordinator	Ongoing	FS-EV-AT-01 Environmental Inspection
Accumulated sediment will be removed with plant equipment but must not damage the structures. Removed sediment must be disposed of appropriately and must not enter waterways.	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Maintenance of the construction sedimentation basins will be monitored by completing weekly checklists.	HSE Coordinator	Ongoing	FS-EV-AT-01 Environmental Inspection
Location of sediment fencing and stockpiles to be discussed with HSE coordinator pre-construction.	General Superintendent	Preconstruction/ design	FS-EV-AT-01 Environmental Inspection
Incorporate discussion on sediment and erosion sources, impacts and mitigation measures into Site Induction.	General Superintendent	Pre- Construction	Project Site Induction
Install sediment controls (coir bales and/or sediment fences) in drainage lines and down slope site areas affected by runoff.	General Superintendent	Pre- Construction	FS-EV-AT-01 Environmental Inspection
Ensure all stormwater collection points are protected with sediment and erosion controls as appropriate for the site (e.g. sediment fences, sediment socks, geotextile etc).	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Temporary spoil stockpiles to be dampened regularly or covered to prevent windblown dust nuisance.	General Superintendent	As required	FS-EV-AT-01 Environmental Inspection
Inspect, maintain and improve (where required) sediment controls – record on weekly site inspection checklist.	General Superintendent	Weekly and/or daily during/ immediately after rainfall.	FS-EV-AT-01 Environmental Inspection

Incorporate discussion on Ground Contamination, impacts and mitigation measures into Site Induction	General Superintendent	Pre-Construction	Project Site Induction
Review Asbestos Survey Reports for potential contamination	General Superintendent	Pre-Construction	As applicable
Ensure construction activities are designed and operated to minimise the potential for ground contamination and to comply with the requirements of the Environmental Protection Act 1997	HSE Coordinator	Ongoing	FS-EV-AT-01 Environmental Inspection
Undertake ongoing visual monitoring for ground contamination (e.g. site inspections) to assess the effectiveness of mitigation measures	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Ensure all constructions wastes are appropriated segregated and stored prior to off-Site removal	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Ensure qualified contractor is engaged to remove all Asbestos Containing Materials (ACM)	General Superintendent	Prior to and during asbestos removal	As applicable
Obtain and record Asbestos Clearance Certificate upon completion of removal	General Superintendent	After asbestos removal	Asbestos Clearance Certificate
Ensure all designated washout areas are appropriately utilised	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Report all incidents of ground contamination to General Superintendent, and implement and maintain all applicable control measures	All Workers	Ongoing	FS-EV-IM-01 Environmental Incident Report & Investigation
Any petrol, oils, fuels, lubricants, chemicals, hazardous substances or other contaminants are to be stored in areas as agreed and nominated by the HSE coordinator. These areas are to be secure, bounded and on an impervious surface.	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
All substances are to have SDS available and within 10m of storage area.	General Superintendent	As required	FS-EV-AT-01 Environmental Inspection
The chemical storage area is to be designed, operated and maintained in accordance with the relevant Australian Standard(s) – (e.g. Flammable and Combustible Liquids; Corrosive Substances etc).	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection
Spill kits with spill containment equipment are to be present on site at all times and all spills are to be reported to REO immediately.	General Superintendent	Ongoing	FS-EV-AT-01 Environmental Inspection

## 8 INSPECT AND TEST

### 8.1 *Monitoring, Inspection and Reporting*

Daily visual inspections of the construction site will be undertaken by the HSE Coordinator and construction personnel to identify any potential waste management issues. Any actions to be

undertaken as a result of site inspections will be recorded in the *FS-QA-RG-02 Corrective & Preventative Actions Register*.

All inspections will be conducted as per the *PL-EV-01 Environmental Management Plan*.

## 9 RECORDS

A record shall be maintained as per *PR-QA-01 Document Control and Record Management Procedure*.

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<b><i>Appendix 1</i></b>	<b><i>Parkes- Soil and Water Management Plan</i></b>
<b><i>Appendix 2</i></b>	<b><i>Griffith – Soil and Water Management Plan</i></b>
<b><i>Appendix 3</i></b>	<b><i>DUBBO: South Keswick – Soil and Water Management Plan</i></b>
<b><i>Appendix 4</i></b>	<b><i>DUBBO: Narromine – Soil and Water Management Plan</i></b>