NEW GRAFTON CORRECTIONAL CENTRE PROJECT

SOIL AND WATER ENVIRONMENTAL CONTROL PLAN

DOCUMENT NO: JHG-NGCC-PLN-SWMP-023

Recommend Documents to be Read in Conjunction

This management procedure should be read in conjunction with the Construction Environmental Management Plan (JHG-NGCC-PLN-EMP-005), Stormwater Management Report (PRO_CIV_CD_RPT-01_001) and the Air Quality Management Plan (JHG-NGCC-PLN-AQMP-021). This document should also be read in conjunction with the Site Primary Erosion and Sediment Control Plan.

Distribution

There are no restrictions on the distribution or circulation of this ECP within John Holland.

Revisions

Draft issues of this document shall be identified as Revision A, B, C etc. Upon initial issue (generally Contract Award) this shall be changed to a sequential number commencing at Revision 0. Revision numbers shall commence at Rev. 1, 2 etc.

DATE	REV	DETAILS	SECTION	PREPARED	REVIEWED	APPROVED
24/04/2017	A	Draft	All	A Harrington	J Braham	
22/05/2017	B	Draft	All	A Harrington	T Doyle	
08/06/2017	0	Issued for Construction	All	T Doyle	M Turner	D Magick
08/06/2017	1	Issued for Construction (Update Doc Number)	All	T Doyle	M Turner	D Magick
03/07/2017	2	Issued for Construction (Update Appendix 1)	All	T Doyle	M Turner	D Magick
11/01/2018	3	Issued for Construction (Update Appendix 1 to incorporate Stage 2 DA Conditions)	All	T Doyle	M Turner	P Cassel

1.0 Scope

This Environmental Control Plan is applicable to all construction phase works associated with the New Grafton Correctional Centre (John Holland and subcontractors).

2.0 Objectives

The objectives of this Soil and Water Environmental Control Plan are to:

- Minimise the risk of increased erosion and/or sediment deposition on the surrounding environment;
- Introduce appropriate measures to prevent surface and groundwater degradation;
- Ensure that water quality objectives (WQOs) defined in this ECP are met throughout all construction activities;
- Ensure compliance with all legislative water quality requirements; and
- Through implementation of the above, reduce the impact of construction activities on the environment.

3.0 Performance Criteria

3.1 General

1. Installation of erosion and sediment controls in accordance with this ECP and supporting project documents.
2. Minimise the potential for soil erosion as a result of construction activities.
3. Implementation of all reasonable and practicable measures to manage and mitigate the potential impacts of spoil removal, haulage and/or placement.
4. No contamination or sedimentation of local water courses / drainage lines occur as a result of construction activities.
5. No discharge of water outside of WQO's is to occur.
6. De-watering shall not take place unless a Dewatering Permit has been obtained and completed to the satisfaction of the PER.
7. No complaints relating to erosion or sedimentation.

3.2 Targets and Water Quality Objectives (WQO)

The following WQO will be used to establish the minimum standard any waters on site need to meet before they can be discharged:

	Discharge to Watercourse / Drainage line leading to watercourse		Dispersed Discharge to Land	
Water Parameter	Objective	Units	Objective	Units
pH	6.5 – 8.5	pH	6.5 – 8.5	pH
Total Suspended Solids (TSS)	< 50	TSS	N/A	N/A
Turbidity*	*To be determined following commencement of works and verification through sampling.	NTU		
Hydrocarbons	No hydrocarbon sheens observed	N/A	No hydrocarbon sheens observed	N/A

*Measurement of turbidity may only be used where a correlation between TSS (number and type of particles suspended in the water column) and Turbidity (NTU) (the ability of light to penetrate the water column) has been established through sampling and analysis at a NATA accredited laboratory has been established. Until this occurs, a test for TSS must be conducted as a minimum.

4.0 References

4. 1 Legislation and Guidance Documentation

Federal Legislation	State legislation	Local Government Laws	Standards / Codes	Other Documentation
1. Environmental Protection & Biodiversity Conservation Act 1999	1. Protection of the Environment Operations Act 1997 (NSW) 2. Protection of the Environment Operations (General) Regulations 2008 (NSW) 3. Environmentally Hazardous Chemicals Act 1985 (NSW) 4. Water Act 1912 5. Water Management Act 2000 (NSW) 6. Water Management Amendment (Controlled Activities) Regulation 2008 (NSW)	n/a.	1. Managing Urban Stormwater: Soil and Construction (Landcom, 2004) ('Blue Book') 2. Australia and New Zealand Guidelines for Fresh and Marine Water Quality (Australian and New Zealand Environment and Conservation Council, 2000) 3. AS/NZS 5667.1:1998 – Water quality – Sampling – Guidelines on the design of sampling programs, sampling techniques and the preservation and handling of samples 4. AS/NZS 5667.12:1998 – Water quality – Sampling – Guidance on sampling bottom sediments 5. AS/NZS 5667.11:1998 – Water quality – Sampling – Guidance of sampling of groundwaters 6. EPA Storing and Handling Liquids: Environmental Protection Participants Manuel 2007 7. Environmental Compliance Report – Liquid Chemical Storage, Handling and Spill Management (DEC 2006).	1. Construction Environmental Management Plan (EMP) 2. Air Quality ECP 3. Site Environment Plan (SEP) 4. JH Safety Quality and Environment Risk Management Procedure 5. NGCC Environmental Impact Assessment (Concept Design and Stage 1) prepared by INSW dated August 2016 6. State Significant Development approval, SD_7413 7. Preliminary Construction Environmental Management Plan prepared by Jacobs dated August 2016.

4.2 Definitions & Abbreviations

- INSW – Infrastructure NSW
- Northern Pathways (Project Co) - Client
- JH –John Holland
- PD – Project Director
- SM – Site Manager
- FM – Foreman / Supervisor
- PER – Project Environmental Representative
- WRA – Workplace Risk Assessment
- AMS – Activity Method Statement
- TRA – Task Risk Assessment
- SEP – Site Environmental Plan
- CEMP – Construction Environmental Management Plan
- ESCP – Erosion and Sediment Control Plan
- ECP – Environmental Control Plan
- EPA – Environmental Protection Authority
- OEH – Office of Environment and Heritage
- WQO – Water Quality Objectives
- Sodic – term given to the amount of sodium (salt) held in soils.

4.3 Site Layout

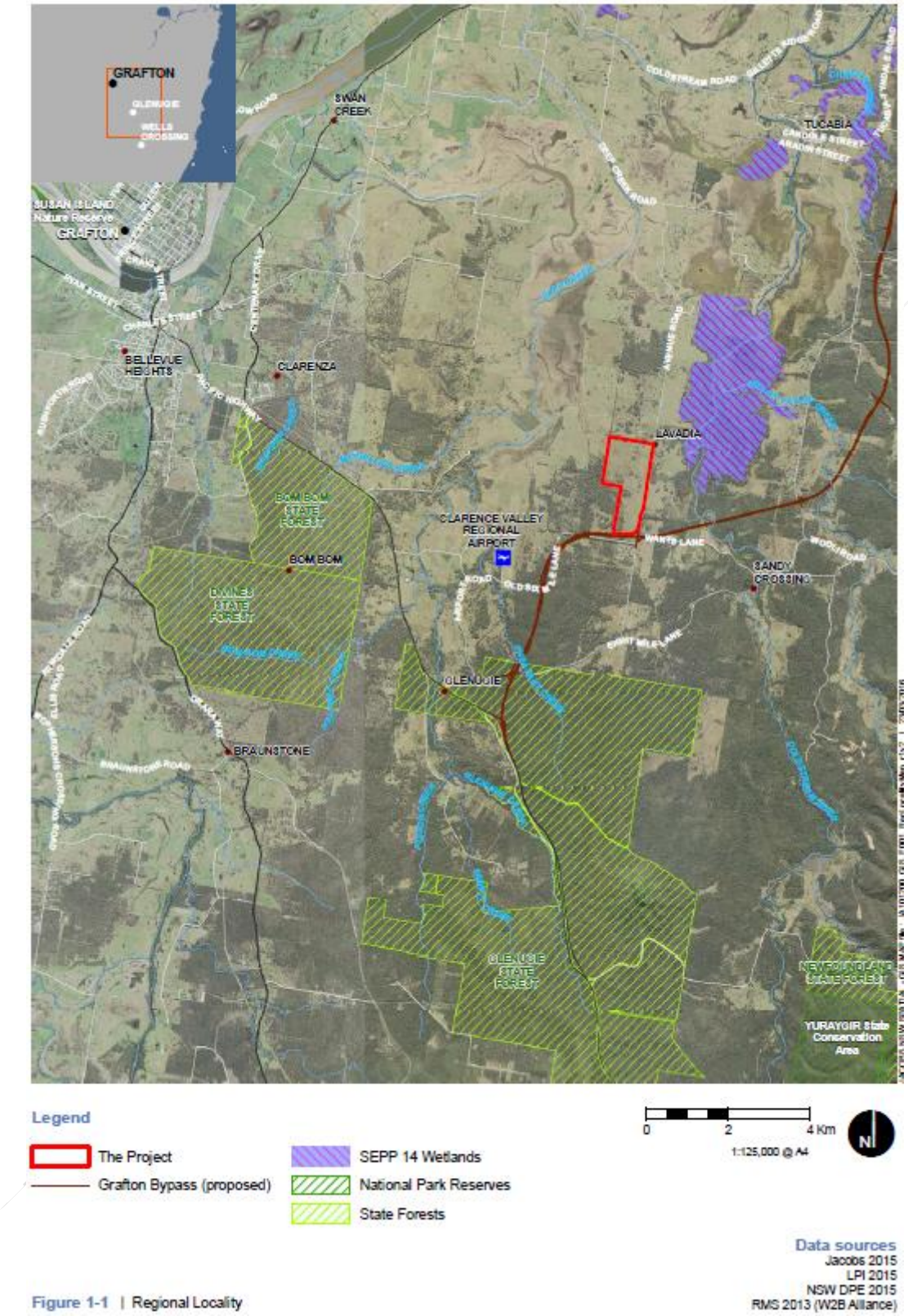

Figure 1-1 | Regional Locality

Figure 1-3 | The Project

5.0 Soil and Water Quality Management			
5.1 Actions			
No.	**Design and Planning**	**Staff Responsible**	**When**
1.	Prior to works commencing, develop a site (or area) specific Primary Erosion and Sediment Control Plan (ESCP) highlighting the locations and detailing side wide erosion and sediment controls.	PER	Prior to start of works
2.	The risks associated with the management of erosion and sedimentation in relation to particular construction activities are to be identified and mitigation controls elected in accordance with the JH Safety, Quality & Environment Risk Management Procedure.	PM / PER	Prior to start of each construction activity
3.	Design and installation of erosion and sediment control devices in accordance with the document *Managing Urban Stormwater – Soils in Construction Volume 1* 'Blue Book' (2004, Landcom). Controls to be downstream of exposed or disturbed areas and adjacent to nearby watercourses / drainage lines. Examples of erosions and sediment controls to be implemented may include, but are not limited to: • Physical demarcation of 'no-go' zones in order to retain existing vegetation / groundcover; • Sediment basins; • Clean and dirty water diversion drains; • Rock checks within diversion drains; • Sandbags, gravel socks and/or geo-fabric; • Sediment fences; and • Sterile straw bales and/or coir logs;	SM / PER	Prior to commencement of construction works – a part of Site Establishment activities; and at all times thereafter
4.	Appropriate controls for erosion and sediment control should be determined by considering: • Local climatic conditions and seasonal variations; • Soil types, particularly dispersive, sodic and saline soils; • Local hydrology affecting the construction zone; • Local drainage, including temporary and overland flow paths and quantities	PER	At all times
5.	Following rain events, the effectiveness of erosion and sediment controls to be reviewed, controls adjusted accordingly and plans updated as required.	SM / PER	Throughout works
	Pre-construction	**Staff Responsible**	**When**
6.	Erosion and sediment controls are to be installed in accordance with the approved ESCP(s). A preliminary ESCP is located in Appendix 1 of this ECP and will be updated as the site changes and the ESCP needs updating.	PD / SM / PER	Prior to commencement of construction works – a part of Site Establishment activities
7.	A stabilised construction access / egress will be established where construction traffic enter or leave from a public road.	PD / SM	At start of works
8.	Clearing of vegetation shall be planned in accordance with approved design documentation and undertaken in a staged manner to ensure a minimum amount of bare ground is exposed at any one time.	D / SM	At start of works
9.	Clearly mark out the development footprint to ensure clearing and earthworks remain within these boundaries.	SM / PER	At start of works

	Plant movement and access	Staff Responsible	When
10.	Vehicles are to remain on the designated roadways and observe the speed limits.	All personnel	At all times
11.	During civil and excavation works, plant will be required to park in designated lay-up zone when not in use, located in a central location on the site.	FM / PER	At all times
12.	During periods of wet or hot and dry conditions, construction activities and plant movements to be limited such as to minimise the movement of vehicles on site during these periods.	PD / FM	As required
13.	Spoil, mud or the like spilt onto internal sealed roads to be removed within a reasonable timeframe through use of a street sweeper or other means.	SM / FM	At all times
	General Requirements	**Staff Responsible**	**When**
14.	All project personnel shall be made aware of erosion & sediment control devices at induction and the ESCP is to be displayed in prominent location at site sheds.	FM / PER	At induction and at all times there after
15.	All project personnel to be made aware of the use of available spill kits in response to spills and/or leaks.	PER	At induction
16.	Erosion and sediment controls shall be cleaned or replaced prior to accumulated sediments and obstructions reducing their effective operating capacity by 60%. Controls which are damaged or otherwise rendered ineffective shall be immediately replaced.	FM / PER	At all times
17.	Prolonged open excavations shall have berms and/or diversion drains on their perimeter to divert overland storm water runoff away from the excavation. Where appropriate, utilise sandbags and/or geofabric to reduce flow velocity and minimise erosion within the drainage channel.	SM / FM / PER	At all times
18.	Erosion and sediment control decisions shall be made to encompass reasonable and practical prevention, and will consider the receiving environment, water quality objectives, quality and quantity of water, location and accessibility, and other requirements.	SM / PER	At all times
19.	All stormwater drainage inlets and other discharge points where there is potential for sedimentation to occur as a result of construction activity shall be protected by geofabric and/or sandbags as appropriate.	FM / PER	At all times
20.	The PER will provide direction for the location, installation, maintenance and removal of erosion control devices in accordance with this ECP.	PER	At all times
21.	Any trenches excavated will be backfilled as soon as practicable after services have been laid.	FM	At all times
22.	Connect downpipes to the stormwater drainage system as soon as roofing is completed.	FM	Once roofing is completed
	Stockpiling, Stabilisation, Rehabilitation and De-mobilisation	**Staff Responsible**	**When**
23.	Suppress earthworks, batters, access tracks and other exposed areas with a bonding agent or water on dry windy days to minimise soil erosion and dust.	SM / PER	At all times
24.	Long term (greater than 10 days) stockpiles, batters and other erosion sensitive areas shall be adequately stabilised through velocity reduction covering, grassing, vegetation, soil binding, water diversion or other as appropriate.	SM / PER	At all times
25.	Where suitable, sediment fencing shall be installed around the perimeter of exposed/disturbed soil stockpiles and at the toe of exposed batters.	SM / PER	As appropriate

26.	Stockpiling locations will be outside the drip line of trees.	SM	At all times
27.	Stockpile locations will be in areas not prone to flash flooding and more than 40m from a watercourse.	SM	At all times
28.	Rehabilitate areas immediately on completion of works.	SM	On completion of works
	Acid Sulphate Soils (ASS) / Potential Acid Sulphate Soils (PASS)	**Staff Responsible**	**When**
29.	The results of testing and the understanding of the history of the formation of these soils on site do not indicate the typical formation of Acid Sulphate Soils. This is because the soils do not contain sulphides, and are non-estuarine in origin. However, based on the test results included in the NGCC Geotechnical Working Paper there is some other acid soil generation hazard which would require further field and laboratory investigation to quantify the risk. Further geotechnical field investigations are required.	PD	Prior to commencement of works
	Management and Removal of Excavated Materials	**Staff Responsible**	**When**
30.	Excavation of subsoil materials would be minimised where possible. During excavation, sodic subsoils would be excavated and stockpiled separately to avoid mixing with competent materials.	PD / SM	At all times
31.	Topsoil will be stockpiled separately from other materials on site.	SM / FM	At all times
32.	Topsoil will be reinstated as soon as practicable.	SM / FM	At all times
33.	Sodic soils to be treated and managed appropriately to address its stability, structure and potential mixing with adjacent materials.	SM / FM	At all times
34.	All stockpiles to be installed immediately following the cessation of rainfall to assess stability.	SM / FM	At all times
35.	Replace soils in their original order if excavations are undertaken to ensure that sodic materials are buried appropriately.	SM / FM	At all times
36.	Re-direct water away from areas where sodic subsoils have been exposed.	SM / FM	At all times
37.	Excavation of the site will not commence until the erosion and sediment controls are in place as per the ESCP for the works.	SM / PER	At start of works
38.	All contaminated and non-contaminated material to be excavated onsite shall be managed in the following manner: • Where disposal is required off-site, material is to be managed in accordance with NSW DECC (2009) *Waste Classification Guidelines: Part 1 – Classifying Waste*. • Re-use / Placement elsewhere on site, material is be managed in accordance with NEPM (Assessment of Site Contamination) 1999.	PD / SM / PER	At start of and throughout the works
	Materials Handling and Storage	**Staff Responsible**	**When**
39.	Chemicals, fuels, oils and hazardous materials used during construction to be stored and handled in accordance with SDS requirements and JH Hazardous Substances and Dangerous Goods Procedure.	SM / FM / PER	At all times
40.	No storage of materials in overland water flow paths.	FM	At all times
41.	No refuelling, stockpiling or chemical storage to occur near stormwater drainage points.	FM	At all times
42.	Refuelling to occur in accordance with an approved refuelling TRA.	FM	At all times
43.	The location of spill kits will be provided on the Site Environmental Plan.	SEP	At all times

44.	Spill kits (site kits or plant kits) to be located in close proximity to machines refuelling or chemical storage locations.	FM	At all times
45.	A copy of the EPA Storing and Handling Liquids: Environmental Protection Participants Manual will be kept onsite for the duration of the project (this document supersedes EPA Bunding and Spill Management Guidelines).	PER	At all times
46.	A site specific Emergency Response Plan will be developed for the project, with consideration of spill response management.		
	Dewatering and Discharge	**Staff Responsible**	**When**
47.	All run off emanating from the site must be effectively filtered or otherwise treated so that the water quality meets water discharge limits specified in Section 3.2.	PER	At all times
48.	There are no watercourses / creeks / rivers that run directly through the site. Dewatering will occur over existing stable, grassed areas.	FM / PER	At all times
49.	No discharge of surface or groundwater is to occur unless the water quality is within project WQO limits set out in Section 3.2. Where compliance with WQOs is not met, water shall be treated as per detail in Section 6.0. Field testing by the PER shall record compliance with project WQOs prior to discharge.	FM / PER	At all times
50.	Dewatering activities shall not take place unless a Dewatering Permit has been obtained and completed to the satisfaction of the PER.	PER	At all times
5.2 Monitoring			
No	**Monitoring Required**	**Staff Responsible**	**When**
51.	General observations for the daily management of erosion and sediment controls shall be documented in site dairies.	FM	Daily as required
52.	Regular inspection of erosion and sediment controls shall be undertaken using the Environmental Inspection Checklist and uploaded in the Project Pack Web.	PER	Weekly and during and after storm events >10mm
53.	Effectiveness of erosion and sediment controls shall be regularly reviewed for adequacy having regard for changing circumstances.	PER	Throughout Works
54.	Prior to any off-site discharge, water to be tested and adjusted as appropriate to meet WQO limits. The project specific Dewatering Checklist is to be used and records to be kept in Project Pack Web.	FM / PER	Prior to discharge
55.	Water quality monitoring results to be made available to the Client on request.	PER	As required
5.3 Reporting			
No	**Reporting Required**	**Staff Responsible**	**When**
56.	Details of field observations shall be reported via the Enviro Inspection Checklist, and communicated to all staff during pre-starts, toolbox and/or team meetings.	PER / SM	All times
57.	All complaints / incidents regarding soil & water shall be reported immediately to the PER.	All Staff	Following receipt of incident/complaint
58.	The Project Director shall be notified immediately of all incidents and valid complaints. Relevant JH procedures for incidents and complaints handling reporting shall be followed.	PER	Following receipt of incident/complaint

59.	JH Operations HSE Team is to be immediately informed of any incident that has caused or is likely to cause material harm to the environment and will advise on the notification of relevant regulators and stakeholders *(As required by the Protection of the Environment Operations Act 1997)*.	PD / PER	Following incident
60.	The JH Project Director shall notify the client of all significant incidents and valid complaints, verbally within 2 hours, and in writing within 24 hours.	PD	Verbally within 2 hours, and in writing within 24 hours
61.	All monitoring results are to be recorded on the Project Pack Web.	PER	Throughout works
62.	A summary of soil and water management to be included in the project monthly environmental report and issued to the Project Director.	PD / PER	Monthly
63.	A summary of incidents, valid complaints and monitoring results (if any) shall be provided monthly to the client and include the actions that were taken to address the incident/complaint.	PD / PER	Monthly
64.	In accordance with the Project Approval (SSD_7413), condition C9, JH shall make available to the public on its website, regular reporting on the environmental performance of the development, in accordance with the reporting arrangements in any plans approved under the conditions of the consent. The information shall be kept up to date..	PD	Throughout construction

6.0 Suggested Corrective Actions	
Problem	**Suggested Corrective Action**
Contamination of surface water identified.	• Associated construction activities to cease immediately upon becoming aware of an environmental incident. • Manage the incident in accordance with JH Incident Management and Investigation Procedure. • Revision of construction activities and further mitigation measures to be considered and implemented as appropriate to prevent further environmental harm from occurring.
Sustained exceedence of water quality criteria	• Investigate and identify potential sources causing the exceedence. • Control the source. • Clean up or rehabilitate any impacts. • Implement appropriate controls. • Review construction methods, control effectiveness and device design. • Report exceedance to Client.
Poor quality of erosion and sediment controls	• Repair/reinstate controls. • Review maintenance schedule, staff responsible and resources.
Spills or leaks of chemicals or hydrocarbons	• Spills/leaks to be controlled, contained, cleaned up and reported. • Spill kits to be used as appropriate. • Review refuelling/plant maintenance practices and modify if appropriate.
Failure of erosion and sediment controls	• Repair or replace controls • Clean up or rehabilitate any impacts • Evaluate failure, investigate alternative controls, site, soils and required water quality levels.
pH levels outside WQO	• pH under WQO, need to increase the pH by adding a base such as agricultural lime. Note. Aglime can take time to become soluble. Other, more soluble products may be available, but ensure you don't overshoot the pH. • pH over WQO, need to lower the pH by adding hydrochloric acid. As a guide, 500mL hydrochloric acid lowers 7000L of water by a pH of approximately 1.5pH. To apply the acid safely all safety requirements specified in SDS and Safety Plans must be followed. • When adjusting water levels any additive should be even dispersed throughout. Limit the amount of adjustments done as this may affect other water qualities. Determine the correct adjustment amounts first and apply accordingly and sparingly.
Turbidity outside WQO	• Either wait for the water to settle naturally or floc the water to speed up the process. Treating water with flocculent (e.g. gypsum, liquid alum or flocculent blocks) will make the sediments drop to the bottom. Where possible, follow manufacturer's instructions in the first instance. • Gypsum: Can take 48hrs+ to act, should be dissolved into a slurry before dispersed into a holding tank/pond to increase its absorption/solubility. Dosing rates of 30kg per 100m3 (100,000L) can be used as a guide. Quantities should be tested prior in a sample bucket or drum.

	• Floc blocks: Can be situated in flow paths to ensure incoming water is dosed with flocculent as it enters holding pond/tank, fine tuning of flocculent can then be completed on the pond/tank. Floc blocks should not be left permanently in a pond/tank, instead they should be in a flow path leading to the pond/tank that is dry when no water is flowing into the system. • Liquid alum: Only to be used in accordance with manufacturer's specifications, or residual alums test conducted prior to discharge. • Synthetic flocculants: Many products are available for floccing purposes, when using other products, ensure they are environmentally friendly and suitable for your application. • Always re-test pH levels after you have allowed the flocculent to work and adjust accordingly. Most flocculants will lower the pH level and lime may be required. Avoid overfloccing. • Remaining flocced sediment can turn into a thick jelly consistency over time. If pH levels are acceptable and no visible hydrocarbons, this sediment may be thinly dispersed somewhere on-site and seeded.
Contaminated soils (if identified)	• Associated construction activities to cease immediately upon becoming aware of contamination. • Manage the removal of contaminated soils from site in accordance with regulatory approvals. • Revision of construction activities and further mitigation measures to be considered and implemented as appropriate to prevent further environmental harm from occurring.

APPENDICES
Appendix 1 – Primary Erosion and Sediment Control Plan (ESCP) Stage 1 and 2 and Specifications (Prepared by NSW Soil Conservation Service)