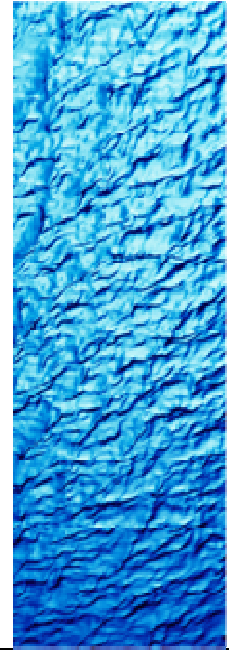
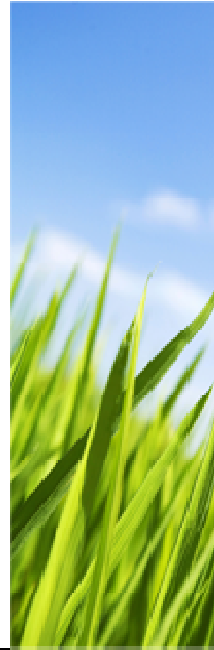
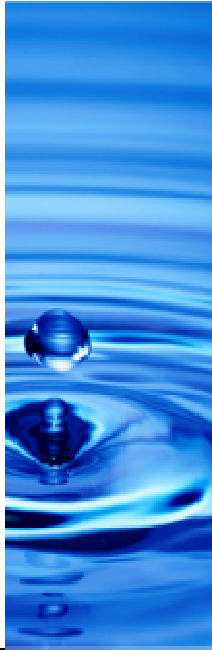
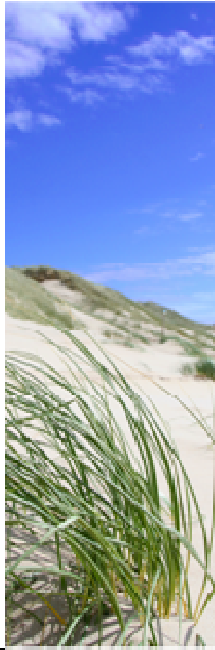
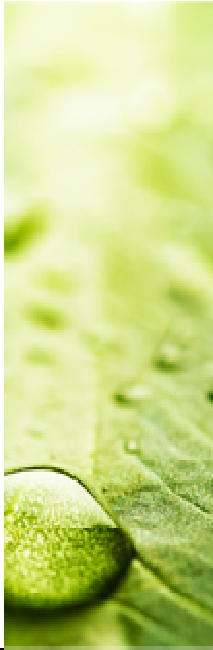


Victorian Desalination Project



D&C Utilities Environmental Management Plan
Attachment L –Monitoring, Inspection, Reporting and Audit Schedule

DOCUMENT NUMBER					
TDV	0	EV	SH	0012.L	03

ATTACHMENT L –MONITORING, INSPECTION, REPORTING AND AUDIT SCHEDULE

TABLE 1 - MONITORING

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
Att I1 – Access and Activities on Agricultural and Grazing Land					
No monitoring requirements					
Att I2 – Hazardous Materials					
Ongoing	Visual observations of hazardous material use, storage	Daily	Foreman or Supervisors	Site Diary	EP checklists as per HSE Activity Scheduler. NCRs via HSE Action database.
Att I3 – Site Reinstatement and Rehabilitation					
Pre construction survey undertaken	Preconstruction survey undertaken prior to construction works	Prior to Works Site Environmental Inspections (SEI)	Community and Stakeholder Manager	Pre-construction condition report	Pre-construction condition report prepared and signed off by landowner or manager

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
Att I4 – Air Quality					
Weather	Monitor weather forecasts using the Bureau of Meteorology	Daily - continuous	Environmental Officer		Predicted rainfall and other extreme weather conditions reported to construction crews
Weather	Monitor weather conditions to relate to air quality monitoring results	Daily - continuous	Environmental Officer	Data log information	Air quality monitoring report
Dust monitoring	Real time PM ₁₀ aerosol dust monitoring utilising portable monitor at sensitive receivers. Locations to vary as construction moves along the alignment.	As required. Sensitive receptors to be established within each work front/ spread prior to commencement of works	Environmental Officer	Data log information	Air quality monitoring report
Dust monitoring	Real time PM ₁₀ aerosol dust monitoring utilising portable monitor.	As required for spot checks. Including visual dust or complaints	Environmental Officer		Air quality monitoring report
Vehicle emissions	Visual assessments of emissions of vehicles, plant and equipment	Standard vehicle and Equipment servicing intervals. Prestart checks daily.	Supervisors and drivers / operators	Site environmental inspection forms Vehicle daily prestart and routine service logs	Site environmental inspection forms logs
Att I5 – Flora and Fauna (Refer to Utilities Flora and Fauna sub plan Attachments 5.1, 5.2 and 5.3. for additional details of Flora and Fauna monitoring)					
Weed surveys	An assessment of weeds within the utilities alignment will be undertaken on a property by property basis.	Pre-construction, quarterly during construction, during reinstatement	Consultant / Rehabilitation Consultant	Consultant form, Rehabilitation Consultant quarterly report	Consultant Report, Rehabilitation Consultant report

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
Habitat assessments	Habitat assessments will be completed to determine the known and potential habitat for significant species along the utilities corridor, and other areas where fauna spotters will be required during clear and grade (refer Attachment I5.2 section 2.2)	Pre-construction	Consultant	Consultant form	SEPs
Pre-clearance surveys for threatened species (flora and fauna)	Targeted searches for threatened species at locations of known or potential habitat for significant species (refer Attachment I5.2 section 2.2)	Pre-construction	Consultant	Consultant form	Consultant report
Supervision of clearing works in fauna habitat	Supervision of clearing work in areas of known or potential habitat for fauna (Refer to Attachment I5.2 various procedures for different species)	During construction	Consultant	Consultant form	Consultant report
Trench inspections	Trench inspections will be undertaken on a daily basis (Refer to Attachment I5.2 Section 6 Trench Management Protocol)	During construction	Environmental Officer	Trenching inspection form	Any injured
Post construction monitoring of areas of known significant species	Post construction monitoring of areas of known significant species	Post construction as per EPBC Significant species management plan	Consultant	Consultant form	Consultant report

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
Post translocation monitoring of flora or fauna translocation recipient sites	Post translocation monitoring of flora or fauna translocation recipient sites	Post construction as per EPBC Significant species management plan	Consultant	Consultant form	Consultant report
Att 16 – Resource Efficiency					
Water, energy waste monitoring (including tracking all water and energy consumed by sub contractors, consultants etc)	Throughout works	Monthly	Environmental Officer to manage	As per contracts	Environmental Programs as per HSE Activity Scheduler. NCRs unresolved within 5 days: HSE Action database. Monthly Project Report
Att 17 – Soil Management					
ASS testing	Undertake monitoring of soils if evidence for presence of ASS/PASS and/or contaminated soils is identified.	Every 100m through areas where excavation is between 0-5m AMSL or frequency agreed to with EPA in areas of low likelihood.	Environmental Officer	Acid Sulfate Soils Sample Sheet, Laboratory Certificates of Analysis	Acid Sulfate Soil Management Plan attachment C.
Contaminated soil testing	Undertake soil testing of potentially contaminated soil in accordance with EPA Guidelines	At locations of known or potential contaminated soil. Frequency determined by extent of contaminated material	Environmental Officer	Laboratory Certificates of Analysis	Contaminated soil report (end of project)

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
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Monitoring

Att 18 – Noise and Vibration

Noise and vibration baseline assessment	Baseline noise and vibration monitoring in rural areas, Berwick residential area and Cranbourne Residential Area.	Prior to commencement of works to establish baseline conditions	Environmental Manager or Consultant	Data log information or consultant report	Noise and vibration monitoring report
Attended noise and vibration assessments	Attended noise and vibration assessments of each main work front including clear and grade, mainline pipe lay, special crossings, sheet piling and pipe jack crossings to determine restrictions on noise and vibration to sensitive receptors and identify works that must be restricted to normal work hours.	Within two weeks of commencement of works In response to complaints, where the complaint may have some basis, and when there are substantial changes in the level of noise or vibration generating activity.	Environmental Manager or Consultant	Data log information or consultant report	Noise and vibration monitoring report
Vibration	Pre-construction condition assessments and dilapidation reports	Condition surveys of nearby buildings may be undertaken as part of the community liaison program.	Community and Stakeholder Manager	Pre-condition and dilapidation reports	Line lists, mitigation plans and rehabilitation plans

Att 19 – Water Quality And Erosion Management

Water quality	Water used for dust suppression to be assessed prior to use to determine its suitability (compared to quality of potential receiving waters e.g. shallow groundwater).	Prior to commencement of use of new water sources	Environmental Manager	Water quality monitoring permit for controlled discharge / dewatering	Permit issued to construction superintendant supervisor or foreman
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Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
Water quality	Before discharging/disposing of collected water from construction activities.	Prior to commencement of use of discharge of water	Environmental Manager	Water quality monitoring permit for controlled discharge / dewatering	Permit issued to construction superintendant supervisor or foreman
Water quality	Before discharging/disposing of collected water from dewatering activities.	Prior to commencement of use of discharge of water	Environmental Manager	Water quality monitoring permit for controlled discharge / dewatering	Permit issued to construction superintendant supervisor or foreman
Water quality	Assessment of receiving waters prior to discharge to determine trigger values	Prior to commencement of use of discharge of water	Environmental Manager	Water quality monitoring permit for controlled discharge / dewatering	Permit issued to construction superintendant supervisor or foreman
Water quality	Continuous turbidity monitoring during significant discharge to waterways or as a result of breach of waterway controls during construction.	During significant discharge to waterways or as a result of breach of waterway controls during construction until trigger levels are achieved downstream.	Environmental Manager	Data log	Data log provided to EPA within one week of event.
Groundwater	Monitor groundwater quality and levels	Prior to commencement of construction, during dewatering and following construction where dewatering has occurred or areas where PASS has been exposed to potential in situ oxidation	Environmental Manager or consultant	Groundwater level monitoring form. Laboratory Certificates of Analysis	Groundwater monitoring report (end of project). is identified. Notification of EPA if change in groundwater quality is identified. Notification of SRW if significant change in groundwater level is identified. t

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
Att I10 – Waterways and Wetlands					
In situ Water Quality Monitoring*	High or medium flow waterways to be crossed via trenching – 2 upstream and 4 downstream monitoring sites per waterway.	Four sampling events prior (at least one month prior), two days during works and monthly for three months post works. Continuous turbidity monitoring.	Environmental Manager / Consultant	Consultants report	Consultants report
	Pipe-jacked waterways – 2 upstream and 4 downstream monitoring sites per waterway.	One month prior. Twice during construction. Three months post construction.	Environmental Manager / Consultant	Consultants reporting form	Consultants report
	Low flow or ephemeral waterways if risk assessment one day prior to clear and grade, haul road construction, trenching works (pipe or power) and reinstatement works determines a need – 2 upstream and 4 downstream monitoring sites per waterway.	As determined by risk assessment one day prior to clear and grade, haul road construction, trenching works (pipe or power) and reinstatement works	Environmental Manager	In situ water quality assessment form	Water quality monitoring report (end of project). Notification of EPA and water asset manager (Melbourne Water or West Gippsland CMA) if trigger levels are significantly exceeded.
Laboratory water quality monitoring **	High or medium flow waterways to be crossed via trenching– 2 upstream and 4 downstream monitoring sites per waterway.	Four sampling events prior (at least one month prior), two days during works and monthly for three months post works. Within 12 hours of substantial rainfall	Environmental Manager / Consultant	Consultants report. Laboratory Certificates of Analysis	Consultants report

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
	Pipe-jacked waterways – 2 upstream and 4 downstream monitoring sites per waterway.	Weekly for one month prior to works and one week after construction. Within 12 hours of substantial rainfall	Environmental Manager / Consultant	Consultants report. Laboratory Certificates of Analysis	Consultants report
Sediment monitoring ***	High or medium flow waterways to be crossed via trenching - 2 upstream and 4 downstream monitoring sites per waterway.	One month and one day prior to works and one month after works.	Environmental Manager / Consultant	Consultants reporting form	Consultants report
Macro-invertebrate	Rapid Bioassessment (RBA) methodology	One month prior to construction. One, six and twelve months after construction	Environmental Manager / Consultant	Consultants report	Consultants report
Flow monitoring	High or medium flow waterways to be crossed via trenching - 1 monitoring site per waterway.	One month prior and at time of construction	Environmental Manager / Consultant	Consultants report	Consultants report
In situ turbidity monitoring	Low flow or ephemeral waterways if risk assessment one day prior to clear and grade, haul road construction, trenching works (pipe or power) and reinstatement works determines a need– 2 upstream and 4 downstream monitoring sites per waterway.	Daily throughout construction and one week later on completion of construction	Environmental Manager / Environmental Officer	In situ water quality assessment form	Water quality monitoring report (end of project). Notification of EPA and water asset manager (Melbourne Water or West Gippsland CMA) if trigger levels are significantly exceeded.

Type	Scope *	Frequency	Responsibility	Form used	Reporting procedure
Monitoring					
Att I11 – Archaeology and Cultural Heritage					
No monitoring requirements					
Att I12 – Acid Sulfate Soils					
In situ assessment	SPOCAS and CRS testing prior to disturbance to determine the extent of ASS.	In areas where excavation is between 0-5m above ASL at 0.5cm increments to 1m below bottom of excavation.	Environmental Manager / Consultant	Laboratory Certificates of Analysis	Acid Sulfate Soil Sub Plan Attachment C
Post treatment testing	SPOCAS and CRS testing of any lime treated ASS.	One sample every 200T of treated soil	Environmental Manager / Consultant	Laboratory Certificates of Analysis	Report to EPA.

* See Table 2 Monitoring Standards & Guidelines below.

TABLE 2 – MONITORING STANDARDS & GUIDELINES

Sub Plan	Applicable Monitoring Standards and Guidelines
Att I1 – Access and Activities on Agricultural and Grazing Land	N/A
Att I2 - Hazardous Materials	<p>Approved Criteria for Classifying Hazardous Substances, 2004, NOHSC:1008(2004), 3rd Edition</p> <p>Code of Practice for the Storage and Handling of Dangerous Good, No. 27, 2000</p> <p>Australian Dangerous Goods (ADG) Code, 7th edition</p> <p>National Code of Practice for Labelling of Workplace Hazardous Substances, 1994, NOHSC: 2012</p> <p>AS 1940 – 1993 The Storage and Handling of Combustible and Flammable Liquids</p>
Att I3 - Site Reinstatement & Rehabilitation	<p>Native Vegetation Framework – A Framework for Action, DSE (2002)</p> <p>Native Vegetation - Revegetation Planting Standards, DSE (2006)</p>
Att I4 - Air Quality	<p>See Air Quality Sub Plan Attachment I4.2 Dust Monitoring Protocol</p> <p>AS 2922-1987 Guide for the Siting of Sampling Units</p> <p>AS 3580.10.1 1991 Particulates – Deposited Matter – Gravimetric Method</p> <p>AS 3580.9.6-1990 Particulate Matter – PM10 – High-volume Sampler with Size-selective Inlet</p> <p>General guidance: A GUIDE TO THE SAMPLING AND ANALYSIS OF AIR EMISSIONS AND AIR QUALITY, Publication 440.1 EPA Victoria (2002)</p> <p>EPA Best Practice Environmental Management – Environmental Guidelines for Major Construction Sites (1996)</p> <p>EPA Vic 2007 Protocol for Environmental Management – Mining and Extractive Industries Pubn 1191, December 2007.</p>
Att I5 - Flora & Fauna	<p>Berg. G. (2006). Potato Cyst Nematode, Agriculture Notes (AG0572). Department of Primary Industry (DPI)</p> <p>DSE (2008). Victorias Public Land ; Phytophthora cinnamomi Strategic Management Plan.</p> <p>EPA (1991). Construction Techniques for Sediment Pollution Control. Publication 275,</p>

	<p>EPA (1996). Environmental Guidelines for Major Construction Sites. Publication 480,</p> <p>Fairfull.S. & Witheridge.G. (2003) Why do fish need to cross the road? Fish passage requirements for Waterway Crossings. NSW Fisheries, Cronulla.</p> <p>Van Praagh. B.D. (1992) The biology and conservation of the Giant Gippsland Earthworm <i>Megascolides australis</i></p> <p>McCoy 1878. Soil Biology & Biochemistry 24(12): 1363–7</p>
<p>Att I6 - Resource Efficiency</p>	<p>Industrial Waste Management Policy (Prescribed Industrial Waste)</p> <p>EPA Publication 448.3 – Classification of Wastes and the Guidelines</p> <p>Australian Code for the Transport of Dangerous Goods</p>
<p>Att I 7 - Soil Management and Att I12 Acid Sulfate Soils</p>	<p>EPA (2009) Industrial Waste Resource Guidelines, Asbestos transport and disposal</p> <p>EPA (2009) Industrial Waste Resource Guidelines, Soil Hazard Categorisation and Management</p> <p>EPA (2009) Industrial Waste Resource Guidelines, Soil Sampling</p> <p>EPA (2009) Industrial Waste Resource Guidelines, Sampling and analysis of waters, wastewaters, soils and wastes</p> <p>EPA (2009) Industrial Waste Resource Guidelines, Waste codes</p> <p>EPA (2009) Industrial Waste Resource Guidelines, Waste categorisation</p> <p>National Environment Protection (Assessment of Site Contamination) Measure, 1999</p>
<p>Att I8 - Noise & Vibration</p>	<p>Noise</p> <p>EPA Technical Guideline 1254 Noise Control Guideline (EPA 1254)</p> <p>EPA Victoria – A guide to the measurement and analysis of noise (EPA Publication 280, 1991)</p> <p>Australian Standard AS 1055.1 – 1997 Acoustics – Description and Measurement of Environmental Noise</p> <p>AS2012.1-1990 Acoustics – Measurement of airborne noise emitted by earth moving machinery and agricultural tractors – Determination of compliance with limit for exterior noise</p> <p>Vibration</p> <p>NSW Department of Environment and Climate Change (DECC) Assessing Vibration: A Technical Guideline (2006)</p> <p>AS2670.2 Evaluation of human exposure to vibration. Part 2 – Vibration in buildings (1-80Hz)</p>

	<p>British Standard BS7385-2:1993 Evaluation and Measurement for Vibration in Buildings, Part 2 – Guide to damage levels from ground-borne vibration</p> <p>German Standard DIN 4150-3:1999 Structural Vibration – Part 3: Effects of vibration on structures</p>
Att I9 - Water Quality & Erosion Management	<p>Urban Stormwater Best Practice Environmental Guidelines (1999), CSIRO Publishing,</p> <p>Best Practice Environmental Management – Environmental Guidelines for Major Construction Sites (February 1996), EPA Victoria</p> <p>Regional River Health Strategies for Port Phillip, Western Port and West Gippsland, EPA Victoria</p> <p>Construction Techniques for Sediment Pollution Control (1991), EPA Victoria</p> <p>Stormwater Pollution Prevention Code of Practice (1998), SA EPA.</p> <p>Analysis of Impacts to Groundwater during Construction and Operation of the Desalination Plant (2010), PBB</p> <p>Groundwater Monitoring and Mitigation Plan During Construction (2009), PBB</p>
Att I10 - Waterways & Wetlands	<p>ANZECC and ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.</p> <p>EPA (1996). Environmental Guidelines for Major Construction Sites. Publication 480, Environment Protection Authority Victoria, Melbourne.</p>
Att I11 - Archaeological & Cultural Heritage	<p>Guide to Preparing Aboriginal Heritage Management Plans</p> <p>Victorian Heritage Strategy: Strengthening Our Communities 2006</p>

TABLE 3 - INSPECTION

Type	Scope	Frequency	Responsibility	Form used	Reporting procedure
Inspection Daily Inspections of Construction activities	General activities and services, including: <ul style="list-style-type: none"> ~ impacts to agricultural and grazing land are being minimised and measures outlined in the Sub Plan are being effectively implemented. ~ hazardous material use, storage ~ measures implemented to protect native vegetation in place ~ dust and odour generating activities ~ energy and water using recycling facilities, waste handling practices ~ excavations and spoil for indicators of possible contamination and/or ASS ~ noise generating activities ~ visual inspections of water turbidity, exclusion zones, chemical discharges 	Daily	Supervisors , Foremen HSE Manager (Hazardous Materials) Rehabilitation Consultant (Site Reinstatement) Cultural Heritage Manager (Archaeological & Cultural Heritage)	Diary – Notes	NCRs via HSE Action database. Observations and areas for improvement tracked in actions register.

Type	Scope	Frequency	Responsibility	Form used	Reporting procedure
Inspection	~ Ensure aboriginal or non – aboriginal sites to be retained are fenced and have ‘exclusion area signs’.				
Environmental Program (EP) compliance checklists	All activities, services and facilities	Monthly	Supervisors , Foremen and HSE Manager	AEMP Attach L – Environmental Inspection Checklists (Area and Activity specific)	Environmental Programs as per HSE Activity Scheduler. Monthly Project Report
Site Environmental Inspections	All activities, services and facilities	Weekly (except week of EP due)	Area Environment Manager and/or 3rd party	AEMP Attach M – Environmental Inspection Checklists (Area and Activity specific)	Environmental Programs as per HSE Activity Scheduler. NCRs unresolved within 5 days: HSE Action database. Observations and areas for improvement tracked in actions register. Monthly Project Report.

TABLE 4 - REVIEW, REPORTING & AUDIT

Type	Scope	Frequency	Responsibility	Form used	Reporting procedure
Reviews					
Landowner and community complaints	Review of complaints from directly and indirectly affected landowners	Monthly	Community Liaison Manager	Consultation Manager database	Review of Consultation Manager database with inputs to project area monthly report (http://www.consultationmanager.com.au/clientlogin.htm)
Compliance Tracker	Review of relevant environmental obligations under PS&PR	Monthly	Area Environment Manager, Environmental Coordinator	Compliance Tracker	The D&C EMP tab of the <i>Environmental Compliance Tracker</i> (TDV-0-EV-RP-0001-01) is provided in the <i>VDP D&C Contractor Monthly Report</i> . The most current version can be found in INCITE.
JSEA	Task specific activity risk assessments checked for relevancy (wrt changes)	Maximum one month between JSEA reviews	Construction Manager & Area Environment Manager	JSEA form	Reviews as per HSE Activity Scheduler.
Reporting					
Complaints from landowners and community	Reporting of landowner and community complaints	Monthly	Community and Land Liaison Manager	Consultation Manager Database and	Input into Monthly Project Report

D&C Utilities EMP Attachment L – Monitoring, Inspection, Reporting and Audit Schedule

Type	Scope	Frequency	Responsibility	Form used	Reporting procedure
EMS Checklist/ Project report	Project performance against EMS	Monthly (for end of month)	Area Environment Manager	AEMP Attach L	HSE Performance Report in HSE Reporting System.
Environmental Performance Report	Workplace environmental performance reporting and compliance status of licences	Monthly (for end of month)	Area Environmental Manager and Project Manager	Online HSE Reporting System	TAU-H&S-PR-016 Measuring and Reporting HSE Performance
Rehabilitation Consultant	Rehabilitation Consultant reports during the D&C Phase to The project and the State as to the progress of rehabilitation and any unresolved complaints or dispute between an owner or occupier concerning rehabilitation	Quarterly	Rehabilitation Consultant	Rehabilitation Report	Rehabilitation Consultant reports to Project company and DSE
Findings from salvage operations	Findings Report from completion of Aboriginal cultural heritage salvage required under the CHMPs.	Within six months of salvage completion	Area Cultural Heritage Manager	Cultural heritage compliance checklist.	Findings Report to be submitted to Aboriginal Affairs Victoria (AAV) Site Registry.
Incident reporting	Reporting of environmental and cultural heritage incidents	As required	Cultural Heritage Manager	HSE Reporting Tool	All environmental and cultural heritage incidents Incidents to be recorded under the environmental incidents or near hits sections of the HSE Reporting Tool for the project and reviewed monthly. Class 1 and 2 incidents reported to AquaSure, DSE and relevant regulatory authority as soon as

Type	Scope	Frequency	Responsibility	Form used	Reporting procedure
					practical.
EPBC Act Approval reports	Report on compliance with the EPBC Act Approval	Annually, within 3 months of every 12 month anniversary of the commencement of construction of the first component, for a period of 5 years	TDJV Stakeholder Director/Environmental Coordinator	No specific form required	Report to be submitted to DEWHA as per the EPBC Act Approval Notice, dated 19 March 2009

Audits

TDJV D&C EMP and Area EMPs Audits	D&C EMP(includes EMP implementation, impacts, interviews)	Quarterly	TDJV Stakeholder Director/Environmental Coordinator	Thiess Env Audit tool v2007	TAU-SYS-PR-001 Audits. Schedule included in HSE Activity Scheduler.
AquaSure	Project performance against AquaSure EMS	As determined by AquaSure EMR	Facilitated by Stakeholder Director and Area Environmental Managers	As determined by AquaSure EMR	Reports to be uploaded to Thiess Env Audit Database on HSE Reporting System. Monthly Project Report.
Third party certifiers and other audits (e.g. EPA)	Workplace EMS (includes EMP implementation, impacts, interviews) plus all construction activities, facilities	Monthly	IR&EA,	As provided by third party	Reports to be uploaded to Thiess Env Audit Database on HSE Reporting System. Monthly Project Report.