Victorian Desalination Project

D&C Utilities Attachment C - Environmental Risk Register

TDV	0	EV	RG	0012.C	03

D&C EMP ATTACHMENT C

ENVIRONMENTAL RISK REGISTER - UTILITIES CORRIDOR

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
	Definitions for consequence, probability and other abbreviations in this register can be found in the Risk (Aspects) Register and Risk Matrix													
	Utilities Site and ROW establishment													
1	Land owner liaison, Geotechnical factual investigations, Feature survey	Access and activities on Agricultural land	Spread of agricultural pests and disease	Movement of soils affected with Potato Cyst Nematode, Bovine Johne's disease and *Phytophthora cinnamomi*	C	3	C3	High	Develop a Biosecurity Management Procedure (D&C Utilities Area EMP Attachment I1.3 (PLV-3-EV-PR-0001-00)) to direct the washdown of vehicles, plant, equipment and personnel on entry and exit of each property.	G	E	3	E3	Moderate
2	Geotechnical investigation in areas of probable ASS	Acid sulfate soils, Agriculture	Disturbance of PASS / AASS at geotechnical test sites	Adverse effects to receiving waters and associated ecosystems from run-off and leachate.	D	3	D3	Moderate	Strip topsoil above test pits to 150mm and stockpile separately to reinstate following testing.	VG	E	2	E2	Low
3			Disturbance of PASS / AASS at geotechnical test sites	Exposure of livestock to contaminated soil.	D	2	D2	Low	Strip topsoil above test pits to 150mm and stockpile separately to reinstate following testing.	VG	E	2	E2	Low
4	Environmental surveys and baseline assessments	Flora and fauna	Taking of protected flora and fauna (protected under EPBC and FFG Act)	Damage or disturbance to significant flora, fauna and habitats	C	3	C3	High	Ensure suitable trained and licensed persons undertake flora and fauna surveys. Maintain records of relevant licenses and approvals. Refer to Environmental Licence, Permits and Approvals Register (Attachment F).	VG	D	2	D2	Low
5	Fencing	Access and activities on Agricultural land	Site establishment activities outside of corridor	Disturbance to farming activities resulting in loss of production or routine operations	D	3	D3	Moderate	Conduct pre-, during- and post-construction landowner liaison to provide landowners with relevant information about the project and project team to develop mitigation plans. Refer to Site Reinstatement Sub-plan (Attachment I3).	VG	D	2	D2	Low
6	Vegetation clearing	Flora and fauna	Impact to native vegetation and/or retained vegetation. Impact to native fauna. Damage or disturbance to surface water ecosystems	Damage or disturbance to significant flora, fauna and habitats. Significant impact to threatened species. Fauna mortality resulting from vegetation clearing activities	C	3	C3	High	Pre-clearance habitat and targeted surveys. All known and potential habitat will be marked on SEPs. Targeted capture and relocation to be undertaken by fauna spotters at all areas of native fauna habitat (general and significant species). Refer to Flora and Fauna Sub Plan (Attachment I5).	G	E	3	E3	Moderate
7	Vegetation clearing, selection of access tracks and extra work spaces	Flora and fauna	Excavation, transfer of material and movement of stockpiles impacting on properties, or sensitive receivers	Impact to native vegetation and/or retained vegetation	C	4	C4	Extreme	Pre clearance habitat assessments and targeted surveys for significant species. Minimise construction footprint, where possible, through areas of native vegetation. Refer to Flora and Fauna Sub Plan (Attachment I5).	G	D	3	D3	Moderate
8	Topsoil stripping (150mm) and stockpiling using graders, excavators and dozers	Surface water quality, Erosion and sediment control	Increase in sheet and rill erosion.	Increased sediment load to nearby surface waters. Erosion of land and loss of topsoil. Increase in sediment load to waterways. Non compliance under Water Act and SEPP (surface water and groundwater) requirements	C	3	C3	High	Prior to commencement of construction and site clearance, a network diversion drains will be constructed across slopes to direct runoff at a non erosive velocity. Temporary erosion and sediments control structures will be placed around stockpiles where required to minimise erosion. Refer to Water Quality and Erosion Control Sub Plan (Attachment I9).	G	D	3	D3	Moderate
9	Topsoil stripping (150mm) and earthworks	Soil Management	Exposure of contaminated materials	Impact to human health and habitat	C	3	C3	High	Confirm potential for contaminated spoil and acid sulfate soils prior to construction to prevent inappropriate management of such spoil types. Refer to Soil Management Sub Plan (Attachment I7).	G	E	3	E3	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
10	Topsoil stripping (150mm) and earthworks	Soil Management	Exposure of contaminated materials	Contaminated materials not handled in accordance with NEPM and EPA guidelines. Possible inappropriate disposal or further contamination of soils / waterways	C	3	C3	High	Contaminated spoil removed from the site is appropriately classified through completion of a sampling programme involving methodologies and procedures set out in the relevant sections of Schedule B(2) of the Assessment of Site Contamination NEPM, Victorian EPA Publication 448.3 – Classification of Wastes and State Environmental Protection Policy (Prevention and Management of Contaminated Land). Refer to Hazardous Materials Sub Plan (Attachment I2).	G	D	2	D2	Low
11	Site establishment earthworks	Cultural Heritage	Establishment of access roads , clearing for ROW and removal of topsoil	Impact to aboriginal sites previously unrecorded or recorded	E	4	E4	High	Implementation of cultural heritage management contingency plan from CHMP attached to the Archaeological and Cultural Heritage Sub Plan (Attachment I4.)	G	E	3	E3	Moderate
12	Site establishment earthworks	Water quality and erosion control, Flora and fauna	Changes to surface water hydrology.	Damage or disturbance to surface water ecosystems	C	4	C4	Extreme	A network diversion drains will be constructed across slopes to direct runoff at a non erosive velocity. Temporary erosion and sediments control structures will be placed around stockpiles where required to minimise erosion. Refer to the Water Quality and Erosion Control Sub plan (Attachment I 9).	G	D	3	D3	Moderate
13	Bulk earthworks in areas of side cut and crossings using excavators and dozers	Contaminated soil	Excavation, transfer of material and movement of contaminated stockpiles and soils	Contaminated materials not handled in accordance with NEPM and EPA guidelines. Possible inappropriate disposal or further contamination of soils / waterways	C	3	C3	High	Contaminated spoil removed from the site is appropriately classified through completion of a sampling programme involving methodologies and procedures set out in the relevant sections of Schedule B(2) of the Assessment of Site Contamination NEPM, Victorian EPA Publication 448.3 – Classification of Wastes and State Environmental Protection Policy (Prevention and Management of Contaminated Land). Refer to Hazardous Materials Sub Plan (Attachment I2).	G	D	3	D3	Moderate
14	Bulk earthworks in areas of side cut and crossings using excavators and dozers	Erosion and sediment control	Land-slip, mass movement or stockpiles or areas of cut and fill profile.	Increased sediment load to nearby surface waters. Erosion of land and loss of topsoil. Increase in sediment load to waterways. Non compliance under Water Act and SEPP (surface water and groundwater) requirements	C	3	C3	High	All areas of fill to be compacted. Diversion drains to be installed in areas of cut and fill to prevent water infiltration or pooling.	G	D	3	D3	Moderate
15	Transportation of 100mm road base (siltstone from quarry)	Flora and fauna	Spread of Phytophthora	Impact to remnant EVC and associated fauna habitat as a result of dieback	D	3	D3	Moderate	Develop a Biosecurity Management Procedure (D&C Utilities Area EMP Attachment I1.3 (PLV-3-EV-PR-0001-00)) to direct the washdown of vehicles, plant, equipment and personnel on entry and exit of each property. Refer to Flora and Fauna Sub Plan (Attachment I5).	G	E	3	E3	Moderate
16	Construction of haul road to provide all weather access along Road.	Public safety, surface water quality	Vehicle movements on and off corridor resulting in transportation of mud onto public roads.	Public safety as a result of changed traffic conditions, particularly around schools. Increased turbidity in receiving waters.	D	5	D5	Extreme	Prepare traffic management plan in consultation with relevant road authorities to direct the movement of trucks between site and disposal locations. Limit truck movements around schools to outside of morning and afternoon drop off and pick up times. Monitor mud on roads. Use street sweepers as required. Install rumble grids, wheel wash and or washed ballast at entry points to paved road.	G	C	2	C2	Moderate
17	Site office	Resource efficiency	Generation of office waste	Increased waste to landfill.	C	2	C2	Moderate	Separated and recycle waste where possible.	G	D	2	D2	Low
18	Site office	Resource efficiency	Excessive use of energy including for lights, air conditioning	Use of resources, increase in greenhouse gases gas production	C	2	C2	Moderate	Promote the efficient use and conservation of resources as part of the training program for all personnel including contractors, subcontractors and operators. Include the waste management hierarchy in the induction with an emphasis on avoidance and minimisation.	F	D	2	D2	Low

General Utilities Construction Activities

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
19	All site works	Flora and fauna	Taking of protected flora and fauna (protected under EPBC and FFG Act)	Damage or disturbance to flora, fauna and habitats	D	4	D4	High	All contractors will be made aware of the environmental values and areas of ecological sensitivity as and during site induction to the site. Refer to Flora and Fauna Sub Plan (Attachment I5).	G	D	3	D3	Moderate
20	All site works	Flora and fauna	Movement of machinery and site vehicles	Impact to fauna resulting from collision with vehicles and machinery	D	4	D4	High	Site speed limit to be restricted to 20km per hour. Refer to Flora and Fauna Sub Plan (Attachment I5).	G	D	3	D3	Moderate
21	All site works	Water quality and erosion control	Design of temporary sediment controls is insufficient for the maximum exposed area	Localised harm to soil and local water quality	C	3	C3	High	Inspections and maintenance of temporary erosion and sediment controls will be completed through construction phase. Refer to the Water Quality and Erosion Control Sub Plan (Attachment I9).	G	C	2	C2	Moderate
22	Movement of plant, vehicles, equipment and personnel between waterways and EVCs	Flora and fauna	Spread of known pathogen of flora and fauna (Phytophthora and Chytrid Fungus)	Infection of fauna and flora resulting from transmission of the disease by vehicle, person, disposal of contaminated material	C	4	C4	Extreme	Develop a Biosecurity Management Procedure (D&C Utilities Area EMP Attachment I1.3 (PLV-3-EV-PR-0001-00)) to direct the washdown of vehicles, plant, equipment and personnel between patches of habitat. Refer to Flora and Fauna Sub Plan (Attachment I5).	G	E	3	E3	Moderate
23	Bulk earthworks (ROW benching and trenching)	Cultural Heritage	Excavation, transfer of material and movement of stockpiles impacting on properties, or sensitive receivers	Impact to aboriginal sites previously unrecorded or recorded	E	4	E4	High	Implementation of cultural heritage management contingency plan. Refer to Archaeological and Cultural Heritage Sub Plan (Attachment I11).	G	E	3	E3	Moderate
24	Bulk earthworks (ROW benching and trenching)	Flora and fauna	Excavation of soils leading to a large scale erosion event	Impact to protected species and other wildlife (e.g. aquatic species)	E	4	E4	High	Prior to commencement of construction and site clearance, a network diversion drains will be constructed across slopes to direct runoff at a non erosive velocity.	G	E	2	E2	Low
25	Hazardous materials storage	Hazardous materials	Hazardous material storage and disposal including use of fuels, gases and concrete. Incorrect separation and segregation of hazardous and dangerous substances	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	D	3	D3	Moderate	Clean up all spills immediately. Contain and absorb spill with sand, earth, inert material or vermiculite. Clean area and DO NOT discharge into sewer or waterways. Refer to the Soil Management Sub Plan (Attachment I.7). Bulk storage chemicals will not occur within 30-50m of a waterway and will not occur within a floodplain or land subject to inundation. Refer to the Water Quality and Erosion Control Sub Plan (Attachment I9). Bulk fuel storage areas (drums or bulk storage tanks) will be bunded in accordance with EPA Bunding Guidelines. Refer to the Hazardous Materials Sub Plan (Attachment I2).	G	E	3	E3	Moderate
26	Hazardous materials bunding	Hazardous materials	Bund design is insufficient for the maximum volume of material stored	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	C	3	C3	High	Bulk fuel storage areas (drums or bulk storage tanks) will be bunded in accordance with EPA Bunding Guidelines. Install bunds where appropriate to reduce the risk of spills entering the stormwater drainage system. Refer to the Hazardous Materials Sub Plan (Attachment I2).	G	D	2	D2	Low
27	Hazardous materials transport	Hazardous materials	Traffic incident involving the transportation of bulk hazardous materials and dangerous substances	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	C	3	C3	High	Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure. Refer to Environmental Incident Response Plan (Attachment K). Refer to the contingency response for spills to water in Water Quality and Erosion Control Sub Plan (Attachment I9). Refer to Contaminated Land Procedure in Soil Management Sub Plan (Attachment I7.2 (TDV-0-EV-SB-0012.I7.2)) for spills to soil.	G	D	3	D3	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
28	All works involving plant, vehicle or equipment with fuel or other hazardous substances	Hazardous materials	Spill resulting from equipment or plant failure (i.e. accidental rupture of tank, etc), careless/negligent act	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	C	3	C3	High	Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure. Ensure appropriate capacity spills kits are readily accessible to areas where hazardous materials and specifically, hydrocarbons are stored. All employees and sub contractors will receive induction training which will include the safe use of hazardous substances being used at the workplace. Refer to Contaminated Land Procedure in Soil Management Sub Plan (Attachment I7.2 (TDV-0-EV-SB-0012.I7.2)) for spills to soil.	G	D	2	D2	Low
29	Vehicle movements, excavation, site general	Air quality	Excavation, transfer of material and movement of stockpiles and soils, or general site management resulting in reduction in air quality from dust	Dust disturbance and impacts on sensitive receptors	B	3	B3	High	Dust from stockpiles may also be controlled by allow vegetation to establish or spraying with a polymer based crusting agent that seals the surface of the stockpile to aid dust suppression. Refer to Air Quality Sub-plan (Attachment I4).	G	D	3	D3	Moderate
30	Works in periods of extreme weather	Air quality	Extreme hot dry conditions during a weekend or overnight break in construction causing excessive dust emanating from the site	Potential for dust disturbance and impacts on sensitive receptors	B	4	B4	Extreme	Under strong wind conditions, review the frequency of watering and spraying of surfaces and, if conditions are dry, increase across the site to control dust generation. Refer to Air Quality Sub-plan (Attachment I4).	G	D	3	D3	Moderate
31	Dust control	Resource efficiency	Excessive use of water	Depletion of resources	C	2	C2	Moderate	Recycled water will be used for dust suppression spraying over potable water where possible.	G	D	2	D2	Low
32	Hot works	Hazardous materials, social and economic, impacts to agricultural productivity	Unexpected ignition of flammable and combustible liquids during normal construction operations	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	C	3	C3	High	Dangerous goods storage areas will be isolated from all sources of ignition and appropriate fire extinguisher coverage provided. Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure.	G	D	2	D2	Low
33	Hot works	Air quality	Fire event resulting from construction activities or natural events leading to a fire event	Potential for air quality impacts on sensitive receptors	D	4	D4	High	Permits will be obtained from the relevant authorities for welding and other hot works during total fire ban days . Refer to Air Quality Sub-plan (Attachment I4).	G	D	3	D3	Moderate
34	Hot works	Flora and fauna	Fire event	Impact to protected species and other wildlife	E	4	E4	High	Permits will be obtained from the relevant authorities for welding and other hot works during total fire ban days.	G	E	3	E3	Moderate
35	Trenching and excavations	Flora and fauna	Impact to fauna resulting from access to open pits/trenches (fall, entrapment or stress)	Impacts to protected native fauna.	D	4	D4	High	Daily trench checks. In areas of suitable habitat during construction, trenches will be open for minimum time practicable. Fauna ramps will be provided to enable small ground dwelling fauna which enter the trench to exit. Refer to Flora and Fauna Sub Plan (Attachment I5).	G	D	3	D3	Moderate
36	Trenching and excavations	Flora and fauna	Erosion and runoff from stockpiles with poor water quality.	Damage or disturbance to surface water ecosystems	C	4	C4	Extreme	Temporary erosion and sediments control structures will be placed around stockpiles where required to minimise erosion. Refer to the Water Quality and Erosion Control Sub Plan (Attachment I 9).	G	D	3	D3	Moderate
37	Trenching and excavations	Flora and fauna, Soil Management	Accidental disposal of ASS/PASS soils resulting in contamination of unaffected areas	Impact to aquatic species from leachate	C	4	C4	Extreme	Assess the extent of ASS along utilities corridor and develop management plan in consultation with EPA. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	G	E	3	E3	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
38	Trenching and excavations	Soil Management	Excavation, transfer of material and movement of stockpiles and soils	Impact to human health and habitat. Contaminated materials not handled in accordance with NEPM and EPA guidelines. Possible inappropriate disposal or further contamination of soils / waterways	C	2	C2	Moderate	In all areas regularly inspect and monitor spoil generated by excavation activities for indicators of possible contamination. Typical indicators of contamination include: - Odorous and/or discoloured/stained material - Asbestos containing materials - Oil/Grease and/or hydrocarbon sheen - Drums/containers of any sort - Fluids/liquids other than groundwater - Putrescibles wastes, general rubbish - Unknown wastes and objects - Unexpected fill materials. If any of the above items are identified, stop work and follow procedures detailed in the Soil Management Sub Plan, section 9 Contingency Measures Contaminated spoil removed from the site is appropriately classified through completion of a sampling programme involving methodologies and procedures set out in the relevant sections of Schedule B(2) of the Assessment of Site Contamination NEPM, Victorian EPA Publication 448.3 – Classification of Wastes and State Environmental Protection Policy (Prevention and Management of Contaminated Land). Refer to Soil Management Sub Plan (Attachment I7).	G	D	2	D2	Low
39	Trenching and excavations	Soil Management	Unexpected discovery of suspected contaminated soil or groundwater.	Localised harm to soil and local water quality	C	3	C3	High	Follow procedures detailed in the Soil Management Sub Plan, section 9 Contingency Measures	G	C	2	C2	Moderate
40	Trenching and excavations	Soil Management	Unexpected discovery of acid sulphate soil or rock during construction	Localised harm to soil and local water quality	C	3	C3	High	Follow procedures detailed in the Acid Sulfate Soil Sub Plan (Attachment I12).	G	C	2	C2	Moderate
41	Trenching and excavations	Noise and vibration	Excavation, transfer of material and movement of stockpiles and soils	Potential for noise and vibration to disturb sensitive receptor	C	3	C3	High	Restrict noisy works to normal working hours. Refer to the Noise and Vibration Sub Plan (Attachment I8).	VG	D	3	D3	Moderate
42	Trenching and excavations	Water quality and erosion control	Impacts to water quality level or quality.	Reduction in groundwater quality and levels.	E	3	E3	Moderate	Monitoring groundwater quality and levels pre- and post-construction. Notify EPA and SRW if significant change in quality and levels detected. Refer to Water Quality and Erosion Control Sub Plan (Attachment I 9).	G	E	2	E2	Low
43	Disposal of waste	Resource efficiency	Unforseen contamination due to inappropriate or illegal disposal of waste	Localised harm to soil and local water quality	C	4	C4	Extreme	All waste to be classified and transported offsite in accordance with EPA Waste Management policies and a Waste Transport Certificate completed and retained where wastes are classified as Prescribed Waste. Consult the Area Environmental Manager on the nature or classification of a waste if it is unknown. Refer to the Resource Efficiency Sub Plan (Attachment I 6).	VG	D	3	D3	Moderate
44	Disposal of waste	Resource efficiency	Inappropriate handing of waste (e.g. packaging etc) not in accordance with the EPA Waste Management Policies	Contamination of soil and waterways	C	3	C3	High	All waste to be classified and transported offsite in accordance with EPA Waste Management policies and a Waste Transport Certificate completed and retained where wastes are classified as Prescribed Waste. Consult the Area Environmental Manager on the nature or classification of a waste if it is unknown. Refer to the Resource Efficiency Sub Plan (Attachment I 6).	VG	D	3	D3	Moderate
45	Disposal of waste	Resource efficiency	Unforseen contamination due to inappropriate or illegal disposal of waste	Localised harm to soil and local water quality	C	4	C4	Extreme	All waste to be classified and transported offsite in accordance with EPA Waste Management policies and a Waste Transport Certificate completed and retained where wastes are classified as Prescribed Waste. Consult the Area Environmental Manager on the nature or classification of a waste if it is unknown. Refer to the Resource Efficiency Sub Plan (Attachment I 6).	VG	D	3	D3	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
	High and Medium Flow Waterway Crossings Construction Activities													
46	Waterway crossings	Water quality and erosion control	Establishment of access roads, clearing of ROW and removal of vegetation	Flood protection systems not maintained resulting in a flooding event.	C	4	C4	Extreme	Any works directly affecting flood control systems to be done under permit to work form relevant asset manager. Implement a flood warning system including daily check of weather forecasts (Bureau of Meteorology) and information distribution to key site personnel and installation of real time water level monitor. Refer to Waterways and Wetlands Sub Plan (Attachment I10).	VG	E	3	E3	Moderate
47	Waterway crossings	Waterways and wetlands	Excavation, transfer of material and movement of stockpiles, equipment and materials	Negative impact to sensitive waterways such as loss of habitat, reduction in habitat quality, damage to bank vegetation, loss of sediment to waterway.	C	3	C3	High	Temporary erosion and sediments control structures will be placed around stockpiles where required to minimise erosion.	G	D	2	D2	Low
48	Waterway crossings	Water quality and erosion control	Open trench waterway crossings resulting in direct disturbance to waterways.	Disturbance to waterways and impact to flood dependent ecosystems	D	3	D3	Moderate	Works in medium and high flow waterways to be completed by a special crossing crew to minimise the construction period. Temporary reinstatement works to be completed if full reinstatement not possible following construction. Refer to Waterways and Wetlands Sub Plan (Attachment I10).	G	D	2	D2	Low
49	Waterway crossings	Water quality and erosion control, Flora and fauna	Change in surface hydrology or aquifer recharge as a result during construction.	Reduction in flow regime in waterways, wetlands or groundwater aquifers. Disturbance to flood dependent ecosystems	D	2	D2	Low	Works in medium and high flow waterways to be completed by a special crossing crew to minimise the construction period. Temporary reinstatement works to be completed if full reinstatement not possible following construction. Refer to Waterways and Wetlands Sub Plan (Attachment I10).	G	E	2	E2	Low
50	Waterway crossings	Water quality and erosion control	Increase in sediment load in waterways as s result of bypass / diversion pumps or flood event.	Reduction in surface water quality.	C	4	C4	Extreme	Temporary erosion and sediments control structures will be placed around stockpiles where required to minimise erosion. Refer to Waterways and Wetlands Sub Plan (Attachment I10).	G	C	2	C2	Moderate
51	Waterway crossings	Water quality and erosion control	Design not to Authority requirements.	Works not designed in accordance with Authority requirements resulting in impact to agricultural or sensitive receivers	C	3	C3	High	Waterways crossing designs to be provided to waterway asset manager.	VG	E	2	E2	Low
52	Waterway crossings	Water quality and erosion control	Excavation, transfer of material and movement of stockpiles and soils	Flood protection systems not maintained resulting in a flooding event	C	3	C3	High	Any works directly affecting flood control systems to be done under permit to work form relevant asset manager. Implement a flood warning system including daily check of weather forecasts (Bureau of Meteorology) and information distribution to key site personnel and installation of real time water level monitor. Refer to Waterways and Wetlands Sub Plan (Attachment I10).	G	C	2	C2	Moderate
53	Waterway crossings	Water quality and erosion control	Diversion of discharge of water from site.	Non compliance under Water Act and SEPP (surface water and groundwater) requirements. Increase in sediment to nearby surface waters and waterways	C	4	C4	Extreme	Any discharge to waterways must have approval from the EPA and relevant Waterway Management Authority. Refer to contingency plans in Attachment I9 Water Quality and Erosion Control Sub Plan.	G	C	2	C2	Moderate
54	Waterway crossings	Water quality and erosion control	Site dewatering including horizontal strip drains and vertical spears.	Reduction of groundwater recharge to wetlands, disturbing or depleting existing groundwater tables may affect spring fed dams	E	3	E3	Moderate	Monitoring groundwater levels pre- and post-construction. Notify SRW if significant change in levels detected. Attachment I9 Water Quality and Erosion Control Sub Plan.	VG	E	2	E2	Low
55	Waterway crossings	Water quality and erosion control	Construction in waterways, temporary reinstatement.	Reduction in groundwater quality and levels. Reduction in surface water quality	D	3	D3	Moderate	Monitoring groundwater quality and levels pre- and post-construction. Notify EPA and SRW if significant change in quality and levels detected.	G	D	2	D2	Low

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
56	Waterway crossings	Water quality and erosion control	Deep excavations below water table in areas of ASS.	Exposure of in situ PASS to oxidation and subsequent acidification of groundwater	D	3	D3	Moderate	Minimise period of dewatering / exposure of PASS. Monitoring groundwater quality pre- and post-construction in areas where dewatering of ASS will occur. Notify EPA and SRW if significant change in quality detected. Refer to Acid Sulfate Soil Management Plan (Attachment I12).	G	D	2	D2	Low
57	Waterway crossings	Water quality and erosion control	Unforseen water and soil contamination due to fuel or oil spill such as during refuelling of pumps	Localised harm to soil and local water quality	C	3	C3	High	Refer to contingency plans in Attachment I9 Water Quality and Erosion Control Sub Plan	G	C	2	C2	Moderate
58	Waterway crossings	Water quality and erosion control	Surface water exposed to sediment flow	Localised harm to soil and local water quality	B	3	B3	High	Refer to contingency plans in Attachment I9 Water Quality and Erosion Control Sub Plan	G	C	2	C2	Moderate
59	Waterway crossings	Water quality and erosion control	Road collapse over a waterway	This may lead to bank collapse, toxicant influx into the waterway and mortality of significant fauna species.	E	3	E3	Moderate	Refer to contingency plans in Attachment I10 Waterways and Wetlands Sub Plan	G	E	2	E2	Low
60	Waterway crossings	Water quality and erosion control	Storm, flooding	Immediate danger to people's safety, environment, damage to equipment	C	4	C4	Extreme	Implement a flood warning system including daily check of weather forecasts (Bureau of Meteorology) and information distribution to key site personnel and installation of real time water level monitor. Refer to contingency response Waterways and Wetlands Sub Plan (Attachment I10).	G	C	2	C2	Moderate
61	Waterway crossings	Waterways and wetlands	Pipe-jacking of waterway failure.	Sensitive waterway compromised as a result of destabilisation from pipe jack failure. There may be impacts on significant species and potentially the Western Port Ramsar site.	E	4	E4	High	Complete risk assessment of waterways to determine most suitable construction technique. Refer to contingency plans in Attachment I10 Waterways and Wetlands Sub Plan	G	E	3	E3	Moderate
62	Waterway crossings	Waterways and wetlands	Accidental contamination of a waterway and/or area of vegetation or significant habitat, through the incorrect disposal of ASS/PASS soils or rock.*	Negative impact to sensitive waterways such as loss of habitat, reduction in habitat quality from contamination.	C	4	C4	Extreme	Assess the extent of ASS along utilities corridor and develop management plan in consultation with EPA.	G	C	2	C2	Moderate
	Bass River Pipe Jack Recovery													
63	Modified pipejack operations in Bass River	Water Quality	Increased turbidity from diversion of water through flumes and potential scour points.	Ramsar Wetlands in Westernport, Downstream habitat for fish, Emergency Water supply	B	3	B3	High	Scour protection (geofabric/rock), mitigative devices (e.g. velocity checks), where possible, to slow velocity of water and reduce scour at critical points (e.g. end of flume). In situ waterway monitoring.	VG	D	2	D2	Low
64		Water Quality	Contamination of waterway from addition of construction materials to waterway	Ramsar Wetlands in Westernport, Downstream habitat for fish, Emergency Water supply	C	3	C3	High	Minimise use of materials in waterway/ water column. Dewater affected area of waterway instead of adding materials to waterway (e.g. Betonite) to seal breach, if possible. Water quality monitoring to be completed in accordance with MIRA Schedule including continuous turbidity monitoring and In situ turbidity monitoring.	VG	E	2	E2	Low
65		Water Quality	Contamination of waterway from dewatering process.	Downstream habitat for fish, Emergency Water supply.	C	3	C3	High	Dewater pit from middle of water column where possible. Treatment of water (e.g. floculant, filtration) as needed. Monitoring of water quality and assessment against trigger values as per the Waterways and Wetlands Sub Plan.	VG	E	2	E2	Low
66		Flora and Fauna	Impact to terrestrial habitat for significant species (, growling grass frogs, swamp skink, glossy grass skink)	Localised impact to populations of significant terrestrial species	C	2	C2	Moderate	Target surveys, minimise area impacted by construction, salvage of species prior to and during clearing	VG	E	2	E2	Low
67		Flora and Fauna	Impact to habitat for significant aquatic species (Australian Grayling, Australian Mudfish, Dwarf Galaxias	Localised and temporary impact to effected area (i.e. 18metre long area of river),	C	2	C2	Moderate	Target surveys prior to works, minimise area impacted by construction, overnight trapping (cage) and salvage (elctrofishing and fyke netts etc) of all fauna in work space following isolation but prior to dewatering, attendance at dewatering by salvage personnel	G	D	1	D1	Low
68		Biosecurity	Introduction and/or spread of weeds or pathogens (root rot, BJD, ACF)	damage to native vegetation, and native fauna (frogs) and loss in agricultural value	E	3	E3	Moderate	Follow Biosecurity Management Procedure (D&C Utilities Area EMP Attachment I1.3 (PLV-3-EV-PR-0001-00)) including personnel and vehicle/machinery washdown prior to site entry and exit	G	E	2	E2	Low

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
69		Cultural Heritage	Damage to historic and/or culturally significant sites. No sites identified through survey or in CHMP	Unidentified objects of significance near riparian zone	E	3	E3	Moderate	Monitor and stop works if objects identified or damages	N	E	2	E2	Low
	Construction of Northern and Southern Compensation Reactor Station Construction													
70	Construction - Delivery of oil for transformers & CRDs	Hazardous materials transport	Traffic incident involving the transportation of bulk hazardous materials and dangerous	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	E	4	E4	High	ISO tanks will be delivered on drop deck trailers and left in situ on the trailer for draining to minimise handling and risk associated with offloading the ISO tank onto the ground. ISO tankers shall be delivered 1 tank at a time to minimise the volume of oil on site at any one time. The ISO tanks are double skinned containers. Refer to JSEA-TXR-12.02 (Transformer & CRD Vacuum and Oil Filling) - Control Measures and D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan.	VG	E	2	E2	Low
71	Construction - Vacuuming and filling of transformer or CRD with oil	Hazardous materials	Bund design is insufficient for the maximum volume of material stored	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	D	4	D4	High	Bunding and spills controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure. When filling transformers or CRD, the ISO tanker trailer will be within CRS footprint which is fully bunded and drains to the triple interceptor. Refer to JSEA-TXR-12.02 (Transformer & CRD Vacuum and Oil Filling) - Control Measures.	VG	E	2	E2	Low
72	Construction - Oil Fire during filling of transformers or CRD	Hazardous materials	Unexpected ignition of flammable and combustible liquids during normal construction operations	Pollution of soils or receiving waters via discharge of hazardous substance	E	4	E4	High	Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure. Have a fire extinguisher (DRY POWDER or FOAM) close by when transferring transformer or CRD oil. When filling transformers or CRD, the ISO tanker trailer will be within CRS footprint which is fully bunded and drains to the triple interceptor.	VG	C	2	C2	Moderate
73		Air Quality	Fire event resulting from construction activities or natural events leading to a fire event	Potential for air quality impacts on sensitive receptors	E	4	E4	High	Fire extinguishers (DRY POWDER or FOAM) to be available on site as per D&C Utilities EMP Attachment I4 – Air Quality Sub Plan - # 33 - 35. In event of a fire notify emergency services as per the D&C Utilities EMP Attachment K - Environmental Incident Response Procedure (TDV-0-EV-PL-0012.K-02).	G	D	3	D3	Moderate
74	Construction - Delivery and filling of power components with SF6 Gas	Hazardous materials	Unexpected leakage of a gaseous substance	Potential for air quality impacts on sensitive receptors	E	2	E2	Low	Monitor and respond to odour as per the D&C Utilities EMP Attachment I4 – Air Quality Sub Plan.	G	E	2	E2	Low
	Utilities Corridor - Acid Sulfate Soil Management													

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
75	Excavation in areas of known or probable ASS	Acid sulfate soils, Groundwater	Exposure of PASS on trench walls or floor resulting in in situ oxidation subsequent of formation of AASS.	Release of sulphuric acid, dissolve aluminium, iron and other metals into the soil and groundwater resulting in adverse impacts to beneficial uses and quality of groundwater.	C	4	C4	Extreme	Investigate and identify areas of ASS soils prior to excavation. Minimise the period that the trench in areas of PASS is open and exposed to oxygen. Apply lime or equivalent neutralising agent to trench walls to limit and neutralise oxidation. Establishment of groundwater monitoring bores and ongoing monitoring. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	VG	C	2	C2	Moderate
76		Acid sulfate soils, Surface water	Accumulation of acidic leachate / run off in trench.	Adverse impacts to surface water and associated aquatic ecosystems as a result of unsuitable disposal of water to the environment.	C	4	C4	Extreme	Investigate and identify areas of ASS soils prior to excavation. Bund trench in areas of know ASS to minimise surface water flow across affected areas. Test trench water prior to disposal to assess potential adverse effects to receiving areas. Treat unsuitable water with hydrated lime or other neutralising agent in tanks prior to disposal. Final disposal to be in accordance with SEPP (Waterways of Victoria). Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	VG	C	2	C2	Moderate
77	Dewatering in areas of known or probable ASS	Acid sulfate soils, Groundwater	Exposure of PASS surrounding the trench to air (in the cone of depression) due to the lowering of the watertable and oxidation subsequent of formation of AASS.	Acidification of groundwater and iron, aluminium and heavy metal contamination groundwater that will reside in the cone of depression. Adverse impacts to beneficial uses and quality of groundwater.	C	4	C4	Extreme	Investigate and identify areas of ASS soils prior to dewatering. Minimise duration of dewatering in areas of known PASS. Minimise the drainage of soils in areas of know PASS, such as through the use of sheet piling in directional drilling launch pits. Maintain high moisture content in soil to minimise exposure to air (i.e. only drain what is required to complete the works) Apply lime or equivalent neutralising agent to trench walls to limit and neutralise oxidation. Establishment of groundwater monitoring bores and ongoing monitoring. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	G	E	3	E3	Moderate
78	Stockpiling of soils contaminated with AASS or PASS	Acid sulfate soils, Surface water quality, aquatic flora and fauna.	Oxidation of PASS resulting in contaminated run-off and leachate.	Contamination of soil, receiving waters or groundwater from contaminated run-off and leachate. Adverse impacts to aquatic ecosystems in receiving waters (potentially including Threatened species such as Growling Grass Frog and Dwarf Galaxias) .	C	3	C3	High	Investigate and identify areas of ASS soils prior to works. Form a leachate collection drain and bund stockpiles to contain runoff. Minimise the period that ASS is stockpiled on the ROW. Compact stockpile surface to minimise surface area and therefore drying and exposure to oxygen. Apply water to mitigate against drying and generation of dust. Stockpiles of extra high risk ASS (soils requiring >25kg CaCO3 / tonne soil) and other medium term-stockpiles will be placed on a guard layer of washed sand mixed with 5kg of fine aglime per square metre for each vertical metre of stockpiled spoil and treated with lime as excavated. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	G	D	3	D3	Moderate
79	Transportation of soils contaminated with AASS or PASS	Acid sulfate soils, Surface water quality	Illegal transportation of contaminated material. Inadvertent spill of ASS material or leachate.	Breach of statutory requirements. Contamination of soil or receiving waters. Adverse impacts to aquatic ecosystems in receiving waters.	D	3	D3	Moderate	Review statutory requirements for transportation and unsure haulage company / vehicles have or meet statutory requirements. Avoid and minimise transportation of highly saturated material. Loads to be covered and not overfilled. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	VG	D	2	D2	Low
80	On-site treatment of soils contaminated with AASS or PASS	Acid sulfate soils, Resource efficiency	Illegal treatment and storage of contaminated material. Incomplete treatment of material resulting in ongoing oxidation.	Breach of statutory requirements. Contamination of soil, receiving waters or groundwater from contaminated run-off and leachate. Adverse impacts to aquatic ecosystems in receiving waters.	D	3	D3	Moderate	On site treatment of ASS to be completed in accordance the Acid Sulfate Soil Sub Plan. SPOCAS or Csr testing of ASS prior to construction required to determine liming rates. Post treatment verifications of treated material. Establishment of groundwater monitoring bores and ongoing monitoring. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	VG	E	3	E3	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
81	Off-site disposal of soils contaminated with AASS or PASS	Acid sulfate soils, Resource efficiency, Waste	Illegal disposal of contaminated material.	Breach of statutory requirements.	E	4	E4	High	Only dispose of contaminated material at a licensed ASS disposal site. Verify license to receive material contaminated with ASS. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	A	E	1	E1	Low
82	Rehabilitation of areas of known or probable ASS	Acid sulfate soils, Agriculture, Terrestrial flora and fauna, Waterways and Wetlands, Site rehabilitation	Incomplete treatment of material resulting in ongoing oxidation. Incomplete separation of ASS and non-contaminated material resulting in trace amounts of ASS in backfill.	Acidification of soil resulting in poor performance of pasture or vegetation reinstatement.	D	3	D3	Moderate	Investigate and identify areas of ASS soils prior to excavation. Rehabilitation Consultant to assess reinstatement of subsoils and advise if neutralisation required. Post reinstatement monitoring of rehabilitation to be completed by the Rehabilitation Consultant. Refer to Acid Sulfate Soil Sub Plan (Attachment I12).	G	D	2	D2	Low
	Utilities Corridor - Discharge of water to lands, dams or reuse													
83	Discharge of water	Access and activities on agricultural land	Trespassing resulting in prosecution. Spread of agricultural pests and disease.	Agricultural productivity. Landowner distress.	C	3	C3	High	Landowners permission to be obtained before discharging any water off the ROW. Personnel to undertake biosecurity washdown before entering properties off the ROW. Refer to Access and Activities on Agricultural Land (Attachment I1).	VG	D	2	D2	Low
84	Discharge of water	Agricultural Land	Deterioration of productivity of agricultural pasture or cropping systems.	Beneficial uses of water suitable for agriculture. Landowner complaint.	C	3	C3	High	Assessment of water quality prior and during discharge. Treatment of water in settlement tank where pH or electrical conductivity may result in harm to the environment (including pasture). Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	D	2	D2	Low
85	Discharge of water	Agricultural Land	Contamination of receiving agricultural pasture or cropping systems with hydrocarbons or other contaminants.	Beneficial uses of water suitable for agriculture. Landowner complaint.	C	4	C4	Extreme	Visual and olfactory assessment of aesthetic values of water prior to discharge. Where water appears contaminated, discharge to cease. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	E	2	E2	Low
86	Discharge of water	Water quality of receiving waters, Flora and fauna	Increase in turbidity of nearby waterways	Beneficial uses of water. Aquatic ecosystems including threatened species of fish. Aesthetic and recreational values of waterway resulting in public or landowner complaint and / or prosecution from EPA or waterway asset manager.	C	3	C3	High	Assess and select suitable discharge point with consideration to the proximity to waterways and likelihood that water will flow overland to and enter waterway. Where possible discharge to vegetated areas to disperse flow and filter water. Assessment of water quality prior and during discharge. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	G	D	2	D2	Low
87	Discharge of water	Water quality of receiving waters, Flora and fauna	Deterioration of other water quality parameters including salinity, dissolved oxygen, pH, temperature and aesthetic characteristics.	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	D	3	D3	Moderate	Assess and select suitable discharge point with consideration to the proximity to waterways and likelihood that water will flow overland to and enter waterway. Where possible discharge to vegetated areas to disperse flow and filter water. Assessment of water quality prior and during discharge. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	G	D	2	D2	Low
88	Discharge of water	Water quality of receiving waters, Flora and fauna	Contamination of waterway with hydrocarbons or other contaminants	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	D	3	D3	Moderate	Visual and olfactory assessment of aesthetic values of water prior to discharge. Where water appears contaminated, discharge to cease. Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	E	2	E2	Low
89	Discharge of water	Agricultural Land	Deterioration of livestock drinking water (agricultural productivity)	Beneficial uses of water suitable for agriculture. Landowner complaint.	C	3	C3	High	Assessment of water quality prior and during discharge. Treatment of water in settlement tank where pH or electrical conductivity may result in harm to the environment (including pasture). Water Quality and Sediment Control Sub Plan (Attachment I9).	G	E	1	E1	Low
90	Discharge of water	Agricultural Land	Contamination of water body with hydrocarbons or other contaminants	Beneficial uses of water suitable for agriculture. Landowner complaint.	D	4	D4	High	Visual and olfactory assessment of aesthetic values of water prior to discharge. Where water appears contaminated, discharge to cease. Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	E	2	E2	Low

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
91	Discharge of water	Water quality of receiving waters	Scour or erosion of receiving areas resulting in mobilisation of sediment and increase in turbidity.	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	C	3	C3	High	Control of discharge point including directing outlet onto geotextile directly into waterway or onto vegetation with intercepting sedimentation fences to slow water flow across floodplain. Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	D	2	D2	Low
92	Discharge of water	Agricultural Land	Scour of discharge area resulting in erosion of agricultural lands	Beneficial uses of water suitable for agriculture. Landowner complaint.	C	2	C2	Moderate	Control of discharge point including directing outlet onto geotextile directly into waterway or onto vegetation with intercepting sedimentation fences to slow water flow across floodplain. Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	D	2	D2	Low
93	Discharge of water	Erosion and Sediment, Agriculture, Flora & Fauna, Waterways & Wetlands	Loss of sediment from construction site resulting from inappropriate discharge of site water	Beneficial uses of water suitable for agriculture. Landowner complaint. Aquatic ecosystems including threatened fish species	C	2	C2	Moderate	Control of discharge point including directing outlet onto geotextile directly into waterway or onto vegetation with intercepting sedimentation fences to slow water flow across floodplain. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	D	2	D2	Low
94	Discharge of water	Acid Sulfate Soil, Agriculture, Flora & Fauna, Waterways & Wetlands, Site Rehabilitation	Incorrect disposal of acidic water resulting contamination of uncontaminated materials, including topsoil and subsoil.	Acidification of soil resulting in poor performance of pasture and vegetation reinstatement.	C	3	C3	High	Assessment of water quality prior and during discharge. Treatment of water in settlement tank with hydrated lime where pH may result in harm to the environment (including pasture).	G	D	2	D2	Low
	Utilities Corridor - Discharge of water to waterways													
95	Removal of water from ROW to waterways	Water quality of receiving waters	Increase in turbidity in receiving waterway	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	A	3	A3	Extreme	Treatment of water in settlement tank and assessment of water quality prior and during discharge. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	D	2	D2	Low
96			Increase in turbidity in receiving waterway	Aesthetic and recreational values of waterway resulting in public or landowner complaint and / or prosecution from EPA or waterway asset manager.	B	3	B3	High	Treatment of water in settlement tank prior to discharge. Notification of EPA, waterway asset manager and surrounding landowner of proposed discharge. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	E	2	E2	Low
97			Deterioration of other water quality parameters including salinity, dissolved oxygen, pH, temperature and aesthetic characteristics.	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	D	3	D3	Moderate	Assessment of water quality prior and during discharge. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	E	2	E2	Low
98			Contamination of waterway with hydrocarbons or other contaminants	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	D	3	D3	Moderate	Visual and olfactory assessment of water quality prior and during discharge. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	M	E	1	E1	Low
99	Treatment of water	Water quality of receiving waters	Contamination of water as a result of chemical used in treatment of water prior to discharge.	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	D	3	D3	Moderate	Assessment of water quality prior and during discharge. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	E	2	E2	Low
100	Discharge of water	Water quality of receiving waters	Scour or erosion of receiving areas resulting in mobilisation of sediment and increase in turbidity.	Beneficial uses of water. Aquatic ecosystems including threatened species of fish.	C	3	C3	High	Control of discharge point including directing outlet onto geotextile directly into waterway or onto vegetation with intercepting sedimentation fences to slow water flow across floodplain. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	D	2	D2	Low
101	Disposal of sediment	Waste management, Agricultural lands	Inappropriate disposal of potentially contaminated sediment collected from tank.	Agricultural lands, soil contamination.	D	3	D3	Moderate	Sediment collected from tank will be disposed of at Lyndhurst, Taylors Road Landfill. Refer to Water Quality and Sediment Control Sub Plan (Attachment I9).	VG	E	1	E1	Low
	Utilities Site reinstatement													

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
102	Movement between agricultural properties	Spread of agricultural pests and disease	Spread of agricultural or horticultural pests or diseases including BJH, Phytophthora or PCN.	Loss of agricultural productivity (PCN and BJH), spread of declared disease (PCN) to new areas, die back of native vegetation and remnant native vegetation communities.	D	4	D4	High	Develop a Biosecurity Management Procedure (D&C Utilities Area EMP Attachment I1.3 (PLV-3-EV-PR-0001-00)) to direct the washdown of vehicles, plant, equipment and personnel on entry and exit of each property. Refer to Access and Activates on Agricultural Land Sub-Plan (Attachment I.1)	G	D	3	D3	Moderate
103	Vehicle movements	Public safety, surface water quality	Vehicle movements on and off corridor resulting in transportation of mud onto public roads.	Public safety as a result of changed traffic conditions, particularly around schools. Increased turbidity in receiving waters.	D	5	D5	Extreme	Prepare traffic management plan in consultation with relevant road authorities to direct the movement of trucks between site and disposal locations. Limit truck movements around schools to outside of morning and afternoon drop off and pick up times. Monitor mud on roads. Use street sweepers as required. Install rumble grids, wheel wash and or washed ballast at entry points to paved road. Refer to Water Quality and Erosion Control Sub Plan (Attachment I.9)	G	C	2	C2	Moderate
104	Removal of access roads	Soil Management	Haul road or other areas of contaminated soil as a result of spills not removed during site reinstatement.	Contaminated materials not handled in accordance with NEPM and EPA guidelines. Possible inappropriate disposal or further contamination of soils / waterways	C	3	C3	High	Contaminated spoil removed from the site is appropriately classified through completion of a sampling programme involving methodologies and procedures set out in the relevant sections of Schedule B(2) of the Assessment of Site Contamination NEPM, Victorian EPA Publication 448.3 – Classification of Wastes and State Environmental Protection Policy (Prevention and Management of Contaminated Land). Refer to Hazardous Materials Sub Plan (Attachment I2).	G	D	2	D2	Low
105	Removal of access roads	Water quality and erosion control	Removal of access roads , replacement of topsoil, planting of vegetation	Flood protection systems not maintained resulting in a flooding event.	C	4	C4	Extreme	Any works directly affecting flood control systems to be done under permit to work form relevant asset manager.	G	D	2	D2	Low
106	Soil reinstatement	Agricultural activity, waterways and wetlands	Reinstatement of subsoil is not to the original grade resulting in depressions or mounding along the corridor.	Change in surface water flow, visual amenity.	C	3	C3	High	Rehabilitation consultant to verify that reinstatement is adequate. Refer to Site Reinstatement Sub Plan (Attachment I.3)	VG	D	2	D2	Low
107	Soil reinstatement	Air Quality	Reinstatement establishment activities impacting properties, fences, land, structures or houses	Potential for Dust disturbance and impacts on sensitive receptors	B	3	B3	High	Control dust from temporary stockpiles of spoil using appropriate measures such as by spraying water regularly, compacting the material or coating to reduce potential for dust generation during stockpiling. Refer to Air Quality Management Plan (Attachment I4).	F	D	3	D3	Moderate
108	Soil reinstatement	Reinstatement, Agricultural activity	Topsoil and Sub-soil condition (compaction, soil profile inversion) resulting in impacts rehabilitation and vegetation establishment.	Long term geomorphologic stability of landform, long term land use.	C	3	C3	High	Rehabilitation consultant to verify that reinstatement is adequate. Refer to Site Reinstatement Sub Plan (Attachment I.3)	VG	D	2	D2	Low
109	Pasture establishment	Reinstatement, Agricultural activity	Failure to establish pasture as a result of unsuitable pasture type, unsuitable timing of reinstatement, unsuitable topsoil chemistry.	Long term land use.	D	3	D3	Moderate	Rehabilitation consultant to verify that reinstatement is adequate. Refer to Site Reinstatement Sub Plan (Attachment I.3)	VG	D	2	D2	Low
110	Native revegetation	Reinstatement, Agricultural activity	Revegetation and habitat restoration with unsuitable or non-endemic species of plant.	Introduction of species that are from non-providence stock or not representative of the regional EVCs.	C	4	C4	Extreme	Prepared landscape design of PR sensitive areas. Procurement of stock to specify native stock to come from providence stock.	VG	D	2	D2	Low
111	Waterway reinstatement	Waterways and wetlands, flora and fauna	Waterway reinstatement impacting fish passage of water quality in waterways and wetlands	Aquatic ecosystems including significant species	C	3	C3	High	Waterways to be reinstated to their precondition form. Requirement of relinquishment of waterway works permits. Refer to Site Reinstatement Sub Plan (Attachment I.3)	VG	D	2	D2	Low
112	Landscape reinstatement	Public amenity	Unsuitable landscape design	Diminished community benefit and use of public areas.	D	4	D4	High	Landscape design for crown lands to be approved by land manager.	VG	D	2	D2	Low

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
	Construction of Delivery Points													
113	Site establishment and construction	Noise and vibration	Excessive noise generation during construction activities	Potential for noise and vibration to disturb sensitive receptor	C	4	C4	Extreme	Noise to be within EPA specified hours unless approval is obtained outside of same (EPA guidelines 7am-6pm mon-fri, 7am-1pm sat). Correct maintenance & operation of all plant, use of noise suppression device, noise label on plant, dunes constructed as noise barriers. Weekly inspection to check noise & vibration. Baseline noise monitoring completed. Handheld noise monitor onsite for further response as required. Noise to be within EPA specified hours unless approval is obtained outside of hours.	VG	D	2	D2	Low
114	Site establishment	Flora and Fauna	Contamination, or spread of pathogens including potato cyst nematode, phytophthora, bovine johne's disease and/or chytrid fungus	Loss of agricultural productivity (PCN and BJH), spread of declared disease (PCN) to new areas, die back of native vegetation and remnant native vegetation communities.	D	4	D4	High	Implement the approved Biosecurity Management Procedure (D&C Utilities Area EMP Attachment I1.3 (PLV-3-EV-PR-0001-00)) and review site specific requirements. Direct the washdown and treatment of vehicles, plant, equipment and personnel on entry and exit where required.	VG	d	2	d2	Low
115	Earthworks	Air quality	Dust - eyes, breathing in - Injury to personnel	Potential for disturbance to workforce, sensitive receptors, flora and fauna and waterways	B	2	B2	High	Use of water carts on roadways & site workings. Continuous dust monitoring to determine when activities need to be altered to reduce dust emissions.	VG	D	2	D2	Low
116	Site establishment and excavation	Flora and Fauna	Damage or disturbance to flora, fauna and habitats	Fauna, flora and habitats of aquatic and terrestrial species	D	4	D4	High	All contractors will be made aware of the environmental values and areas of ecological sensitivity as and during site induction to the site. Site environment plans to be developed for each worksite.	VG	d	2	d2	Low
117	Site establishment and earthworks	Soil management	Topsoil and Sub-soil condition (compaction, soil profile inversion) resulting in impacts rehabilitation and vegetation establishment.	Soil contamination caused by construction activities	C	3	C3	High	Topsoil (150mm) to be stripped and stockpiled separate to soil (and flagged for use in reinstatement). Follow site environmental plans & procedures. Wind row top soil where possible.	VG	D	2	D2	Low
118	Storage and construction use	hazardous Materials	Oil leaks, hydraulic hose failure, fuel spills from plant & equipment. Re-fuelling Equipment/Vehicles. Protective floor coating (Epoxy paint) Lamination of GRP pipe	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	C	3	C3	High	Keep Hazardous substance storage to a minimum & ensure containers are labelled. Have appropriate spill equipment available, and contain spills immediately. Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure. MSDS readily available. Follow work procedures for use, handling, processing, storage, transportation, cleaning up and disposal of hazardous substance. D&C Utilities EMP Attachment K - Environmental Incident Response Procedure (TDV-0-EV-PL-0012.K-02) to be available and displayed onsite.	VG	D	2	D2	Low
119	Earthworks	Water Quality and Erosion	Earthwork activities including stockpile management	Negative impact to sensitive waterways such as loss of habitat, reduction in habitat quality, damage to bank vegetation, loss of sediment to waterway.	C	3	C3	High	Erosion and settlement control measures including silt fence installation. Bunds built around stockpile material to contain stockpile material	VG	D	2	D2	Low

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
120	Excavation	Acid Sulphate Soils	Cross contamination of surrounding stockpiles	Contamination of soil, receiving waters or groundwater from contaminated run-off and leachate. Adverse impacts to aquatic ecosystems in receiving waters (potentially including Threatened species such as Growling Grass Frog and Dwarf Galaxias) .	B	3	B3	High	The Acid Sulfate Soil Sub-plan to be included in workpack/s. Management actions (site specific) to be toolboxed and followed. ASS is known to be present at DP4 and DP5. Contractor to be made fully aware of current status of this and other relevant areas. On site treatment of ASS to be completed in accordance the Acid Sulfate Soil Sub Plan (Attachment I12).	VG	D	2	D2	Low
121	Disposal of water / excavations	Groundwater Management	Incorrect discharge to drainage system, pollution of water body	Negative impact to sensitive waterways such as loss of habitat, reduction in habitat quality, damage to bank vegetation, loss of sediment to waterway and/or pollution with contaminants	B	3	B3	High	Groundwater not to be discharged without discharge permit issued in accordance with the PLJV Dewatering / Discharge Procedure (Attachment I9.1). Groundwater will be discharged to land, dams and waterways accompanied by a discharge permit in accordance with the Water Quality and Erosion Management Sub Plan (Attachment I9). Contact Environment team for discharge permits and for notification to relevant stakeholder/s.	VG	D	2	D2	Low
	Pipeline Hydrotesting and Commissioning													
122	Temporary Access	Minimise impacts on Agricultural Productivity	Impact to reinstated areas.	Impact to flora or agricultural land due inappropriate vehicle/machine movement through reinstated construction easement.	E	4	E4	High	Access to site to be in accordance with the Community Involvement Plan and existing control measures in Att I1 D&C Utilities EMP - Agricultural Management Sub Plan (specifically control Measures 7-13) and Site reinstatement and Rehabilitation Sub Plan (control measure 6).	VG	E	3	E3	Moderate
123	Test Section Flooding/ Hydrotesting	Minimise impacts on Agricultural Productivity	Impact to flora and fauna	Introduction and/or spread of weeds or pathogens (BJD, P.cinnamomi, PCN, ACF)	D	4	D4	High	Biosecurity measures to be implemented as per Att I1 D&C Utilities EMP - Agricultural Management Sub Plan. (Control Measure Number: 5, 20, 25) and the Utilities Corridor Biosecurity Management Procedure (D&C Utilities Area EMP Attachment I1.3 (PLV-3-EV-PR-0001-00)) and Att I5 D&C Utilities EMP - Flora & Fauna Sub Plan.	VG	D	3	D3	Moderate
124		Minimise impacts on Agricultural Productivity	Discharge to adjoining land	Deterioration of agricultural productivity due to excess water on pasture/cropping systems or impacts to livestock water supplies.	D	3	D3	Moderate	All discharge of water will be done in accordance with the Utilities Dewatering / Discharge Procedures (Att I9.2) and Att I9 D&C Utilities EMP - Water quality & Erosion Management Sub Plan control measures.	VG	D	2	D2	Low
125		Protect Waterways and Wetlands	Unforseen water and soil contamination due to fuel or oil spill such as during refuelling of pumps	Localised harm to soil and local water quality	D	3	D3	Moderate	Prevention and spill response as per Att I2 D&C Utilities EMP - Hazardous Material Sub Plan. Minimising the risk of contamination to waterways will be done as per Att I9 D&C Utilities EMP - Water quality & Erosion Management Sub Plan and Att I10 D&C Utilities EMP - Waterways & Wetlands Sub Plan. Disposal of any contaminated soil or water to be in accordance with EPA guidelines as per Att I6 D&C Utilities EMP - Resource Efficiency Sub Plan.	G	E	3	E3	Moderate
126		Hazardous Materials and Dangerous Goods	Spill resulting from equipment or plant failure.	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	D	4	D4	High	Management as per Att I2 D&C Utilities EMP - Hazardous Material Sub Plan.	G	D	2	D2	Low
127		Hazardous Materials and Dangerous Goods	Bund design is insufficient for the maximum volume of material stored	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	D	4	D4	High	Management as per Att I2 D&C Utilities EMP - Hazardous Material Sub Plan.	G	E	2	E2	Low

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
128		Waste - General	Inappropriate disposal of general construction waste	Nearby properties receiving unwanted rubbish, pollution of surrounding waterways and potential harm to fauna	D	2	D2	Low	Waste management as per Att I6 D&C Utilities EMP - Resource Efficiency Sub Plan.	G	D	2	D2	Low
129		Noise & Vibration	Air valves	Disturbance to sensitive receptors due to airborne noise from air valves.	C	2	C2	Moderate	Management as per Att I8 D&C Utilities EMP - Noise & Vibration Sub Plan. Sensitive receptors in close proximity to air valves to be advised of the potential for noise. Attended noise monitoring of air valves to be undertaken in test section 1 to assess actual noise levels and compare to relevant EPA noise guidelines for area.	F	D	2	D2	Low
130		Air Quality - Dust/Emissions	Machine and vehicle movements resulting in excessive dust	Dust disturbance and impacts on sensitive receptors	C	3	C3	High	Management in accordance with Att I4 D&C Utilities EMP - Air Quality Sub Plan.	G	D	3	D3	Moderate
131	Filling of transfer pipeline for hydrotest	Protect Waterways and Wetlands	Leakage during pipe filling resulting in uncontrolled discharge resulting in impact to aquatic flora and fauna and water quality.	Reduction in beneficial values of waterway and adverse impacts to aquatic fauna due to chlorinated or turbid water	D	4	D4	High	Pneumatic pressure test scour valves prior to filling to verify seal. Minimise and control discharge in accordance with the Hydrotest Contingency Plan (PLV-3-MA-PR-0001-01) including shut down feed pumps of fill valves to cease further filling of pipe until leak is controlled and closure of isolation valves. Implement contingency response procedure from Pipeline Hydrostatic Test Discharge Procedure_Rev 02 (PLV-3-EN-PR-0003-00) to manage impacts to water quality. Notify EPA and Waterway asset manager.	G	D	2	D2	Low
132		Minimise impacts on Agricultural Productivity	Leakage during pipe filling resulting in uncontrolled discharge resulting in uncontrolled discharge to adjoining land	Waterlogging of pastures.	D	2	D2	Low	Pneumatic pressure test scour valves prior to filling to verify seal. Minimise and control discharge in accordance with the Hydrotest Contingency Plan (PLV-3-MA-PR-0001-01) including shut down feed pumps of fill valves to cease further filling of pipe until leak is controlled and closure of isolation valves. Notify landowners of any off easement waterlogging that has occurred.	G	D	2	D2	Low
133	Exercise of scour valves	Protect Waterways and Wetlands	Controlled discharge to waterways.	Reduction in beneficial values of waterway and adverse impacts to aquatic fauna due to chlorinated or turbid water	B	3	B3	High	Pneumatic pressure test scour valves prior to filling to verify seal and avoid requirement to exercise valve prior to chlorine decay within pipeline. Identify sites where significant aquatic fauna (frogs and fish) are known to occur. Exercise valve in manner that avoids discharge of water to waterway (refer to Pipeline Hydrostatic Test Discharge Procedure_Rev 02 PLV-3-EN-PR-0003-00). Test source water at scours discharging to waterways. Chemical dechlorination is required where residual free chlorine is detectable. Water will be tested as per requirements of the Pipeline Hydrostatic Test Discharge Procedure_Rev 02 PLV-3-EN-PR-0003-00 which includes a Detectable Residual Chlorine Monitoring Form (PLV-3-EN-FM-0020-00),	VG	D	2	D2	Low
134		Minimise impacts on Agricultural Productivity	Controlled discharge to adjoining land	Waterlogging of pastures.	B	2	B2	High	Minimise duration of scour valve exercise in areas subject to waterlogging (refer to Pipeline Hydrostatic Test Discharge Procedure_Rev 02 PLV-3-EN-PR-0003-00). Notify landowners of any off easement waterlogging that has occurred.	G	C	2	C2	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
135	Hydrotest of transfer pipeline	Protect Waterways and Wetlands	Minor leaking failure during hydro-test resulting in uncontrolled discharge to waterways.	Reduction in beneficial values of waterway and adverse impacts to aquatic fauna due to chlorinated or turbid water	C	3	C3	High	Pneumatic pressure test scour valves prior to filling to verify seal. Minimise and control discharge in accordance with the Hydrotest Contingency Plan (PLV-3-MA-PR-0001-01) including shut down feed pumps of fill valves to cease further filling of pipe until leak is controlled and closure of isolation valves. Implement contingency response procedure from Pipeline Hydrostatic Test Discharge Procedure_Rev 02 PLV-3-EN-PR-0003-00). to manage impacts to water quality. Notify EPA and Waterway asset manager.	G	D	2	D2	Low
136		Minimise impacts on Agricultural Productivity	Uncontrolled discharge to adjoining land	Waterlogging of pastures.	C	2	C2	Moderate	Pneumatic pressure test scour valves prior to filling to verify seal. Minimise and control discharge in accordance with the Hydrotest Contingency Plan (PLV-3-MA-PR-0001-01) including shut down feed pumps of fill valves to cease further filling of pipe until leak is controlled and closure of isolation valves. Notify landowners of any off easement waterlogging that has occurred.	G	D	2	D2	Low
137	Major (catastrophic) failure during hydrotest	Protect Waterways and Wetlands	Major uncontrolled discharge to waterways.	Reduction in beneficial values of waterway and adverse impacts to aquatic fauna due to chlorinated or turbid water	E	4	E4	High	Minimise and control discharge in accordance with the Hydrotest Contingency Plan (PLV-3-MA-PR-0001-01) including shut down feed pumps of fill valves to cease further filling of pipe until leak is controlled and closure of isolation valves. Sequence of hyper chlorination to minimise the volume of hyper-chlorinated water held in pipe during hydrotest period. Implement contingency response procedure from the Pipeline Hydrostatic Test Discharge Procedure_Rev 02 PLV-3-EN-PR-0003-00) to manage impacts to water quality. Notify EPA and Waterway asset manager.	F	E	3	E3	Moderate
138		Minimise impacts on Agricultural Productivity	Major uncontrolled discharge to adjoining land	Waterlogging of pastures.	E	4	E4	High	Minimise and control discharge in accordance with the Hydrotest Contingency Plan (PLV-3-MA-PR-0001-01) including shut down feed pumps of fill valves to cease further filling of pipe until leak is controlled and closure of isolation valves. Sequence of hyper chlorination to minimise the volume of hyper-chlorinated water held in pipe during hydrotest period. Notify landowners of any off easement waterlogging that has occurred.	F	E	3	E3	Moderate
139	Depressurise of hydrotest section 4	Protect Waterways and Wetlands	Controlled discharge to waterways.	Reduction in beneficial values of waterway and adverse impacts to aquatic fauna due to chlorinated or turbid water	A	2	A2	High	Test and characterise water prior to discharge. Treat water quality to meet SEPP (WoV) and maintain beneficial qualities during discharge. Notify EPA and Waterway asset manager.	G	C	2	C2	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
140	Draining of pipe for rectification works dur to hydro test failure	Protect Waterways and Wetlands	Controlled discharge to waterways.	Reduction in beneficial values of waterway and adverse impacts to aquatic fauna due to chlorinated or turbid water	C	4	C4	Extreme	Calculate anticipated volume of water required to allow rectification works. Assess most suitable locations (scours) to discharge large quantities of water in order to access target section of pipe. Test and characterise water prior to discharge. Treat water quality to meet SEPP (WoV) and maintain beneficial qualities during discharge. Chemical dechlorination is required where residual chlorine residual chlorine is detectable. Notify EPA and Waterway asset manager and determine if Permit is required for discharge prior to commencement. Mediate discharge to a rate suitable to background flow and maximise dilution and maintain trigger values.	G	C	2	C2	Moderate
141		Minimise impacts on Agricultural Productivity	Controlled discharge to adjoining land	Waterlogging of pastures.	C	3	C3	High	Calculate anticipated volume of water required to allow rectification works. Assess most suitable locations (scours) to discharge large quantities of water in order to access target section of pipe. Test and characterise water prior to discharge. Notify landowners of any off easement waterlogging that has occurred.	G	C	1	C1	Low
142	Discharge of water due to unsuitable water quality for return to drinking water catchment	Protect Waterways and Wetlands	Controlled discharge to waterways.	Reduction in beneficial values of waterway and adverse impacts to aquatic fauna due to chlorinated or turbid water	C	4	C4	Extreme	Calculate anticipated volume of water required to allow rectification works. Assess most suitable locations (scours) to discharge large quantities of water in order to access target section of pipe. Test and characterise water prior to discharge. Treat water quality to meet SEPP (WoV) and maintain beneficial qualities during discharge. Chemical dechlorination is required where residual chlorine is detectable. Notify EPA and Waterway asset manager and determine if Permit is required for discharge prior to commencement. Mediate discharge to a rate suitable to background flow and maximise dilution and maintain trigger values.	G	C	2	C2	Moderate
143		Minimise impacts on Agricultural Productivity	Controlled discharge to adjoining land	Waterlogging of pastures.	C	3	C3	High	Calculate anticipated volume of water required to allow rectification works. Assess most suitable locations (scours) to discharge large quantities of water in order to access target section of pipe. Test and characterise water prior to discharge. Notify landowners of any off easement waterlogging that has occurred.	G	C	1	C1	Low
144	Chlorination	Protect Waterways and Wetlands	Impact to aquatic flora and fauna	Contamination of waterways due to addition of chlorine to waterway leading to habitat damage.	D	4	D4	High	Storage and handling of neat or concentrate chlorine to be in accordance with the storage and handling of chemical control measures in the Att I9 D&C Utilities EMP - Water quality & Erosion Management Sub Plan. (Control Measure Numbers: 16-21) and the Att I2 D&C Utilities EMP - Hazardous Material Sub Plan.	G	E	3	E3	Moderate
145		Hazardous Materials and Dangerous Goods	Chlorine Spill from inappropriate used, storage, disposal.	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	C	3	C3	High	Any spill of neat or concentrate chlorine will be response to in accordance with hazardous material contingency procedure in the Att I2 D&C Utilities EMP - Utilities Hazardous Materials Sub-plan and the Att K D&C Utilities EMP - Environmental Incident Response Plan.	G	D	2	D2	Low

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
146		Hazardous Materials and Dangerous Goods	Bund design is insufficient for the maximum volume of material stored	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	D	4	D4	High	Management of hazardous material in accordance with Att I2 D&C Utilities EMP - Hazardous Material Sub Plan.	G	D	2	D2	Low
	Power supply testing and Commissioning													
147	Testing oily water separator	Hazardous materials	Spill resulting from equipment or plant failure	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	E	2	E2	Low	Effective engineering design of oil separator. Small quantity of oil required to test interceptor. Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure.	VG	E	1	E1	Low
148	Testing oil containment systems	Hazardous materials	Spill resulting from equipment or plant failure	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	E	2	E2	Low	Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure.	VG	E	1	E1	Low
149	Commissioning - Energisation / testing of Transformers & CRD's	Hazardous materials	Transformers or CRD's leaking oil.	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	D	3	D3	Moderate	Appropriate design of bunding and effective working of the oil separator. D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan.	A	E	2	E2	Low
150	Commissioning sewage and waste water systems	Hazardous materials	Unforseen contamination due to inappropriate handling of hazardous materials	Localised harm to soil and local water quality	D	3	D3	Moderate	Spill would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure.	VG	E	2	E2	Low
151	Commissioning	Noise	Exposure of sensitive receptors to excessive noise levels.	Noise levels exceeding SEPP (N-1) criteria / N3/89 Guidelines.	D	2	D2	Low	CRD's & transformers designed to output noise levels lower than specified criteria (based on noise levels given in DP0-0200 Project Wide Noise Control, Section 4.0). Verification of these levels will be conducted during testing.	G	E	2	E2	Low
152	Commissioning -Lead Acid Batteries – Contained within Battery rooms.	Hazardous materials	Spill resulting from equipment or plant failure (i.e. accidental rupture of tank, etc), careless/negligent act	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	D	2	D2	Low	Appropriate design of acid spill containment and sump system - SK-PBB-ST-4-B-500-3000 & 3001. Any spill would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure.	VG	D	2	D2	Low
153	Commissioning - Temporary / Permanent Emergency Generator Sets (approx 100kVA)	Noise (Sensitive Receptors)	Exposure of sensitive receptors to excessive noise levels.	Noise levels exceeding SEPP (N-1) criteria / N3/89 Guidelines.	E	4	E4	High	Management of noise impacts to sensitive receptors to be undertaken in accordance with the D&C Utilities EMP Attachment I8 – Noise and Vibration Sub Plan. For commissioning activities, notifications will be made to sensitive receptors (surrounding residence) of any works that are not restricted to EPA normal working hours.	VG	E	2	E2	Low
154		Hazardous materials	Spill resulting from equipment or plant failure or during refuelling	Pollution of soils, receiving waters or potential harm / injury to personnel, flora and fauna via discharge of hazardous substance	C	3	C3	High	Any spill would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure.	G	D	2	D2	Low
155	Commissioning transformer	Hazardous materials (Explosion)	Unexpected ignition of flammable and combustible liquids during normal construction operations	Pollution of soils or receiving waters via discharge of hazardous substance	E	4	E4	High	Spills would be controlled in accordance with the D&C Utilities EMP Attachment I2 – Utilities Hazardous Materials Sub Plan spill / breach of hazardous materials contingency response procedure. In event of a explosion notify emergency services and respond as per the D&C Utilities EMP Attachment K - Environmental Incident Response Procedure.	F	E	3	E3	Moderate

Risk #	Activity / Construction Method	Performance Criteria / Performance Requirement SUBJECT	Potential Hazard (Environmental Aspect & Impact Pathway)	At Risk (Potential Impact)	Probability (Table 2)	Consequence (Table 3)		Inherent Risk (Before Controls)	Controls: current or planned prior to work to ensure obligations (including performance requirements and performance criteria) are met (Table 4 - reference specific option)	Control effectiveness (Table 5)	Probability (Table 2)	Consequence (Table 3)		Residual Risk (After Controls)
156		Air Quality (Fire Event)	Fire event resulting from construction activities or natural events leading to a fire event	Potential for air quality impacts on sensitive receptors	E	4	E4	High	In event of a fire notify emergency services and respond as per the D&C Utilities EMP Attachment K - Environmental Incident Response Procedure.	F	E	3	E3	Moderate
157	Testing - Temporary Access to easement post reinstatement	Minimise impacts on Agricultural Productivity	Impact to agricultural land during testing	Impact to agricultural land due to inappropriate vehicle/machine movement through reinstated construction easement	E	4	E4	High	Biosecurity measures to be implemented as per Att I1 D&C Utilities EMP - Agricultural Management Sub Plan. (Control Measure Number: 5, 20, 25) and the Utilities Corridor Biosecurity Management Procedure (Attachment I1.3) and Att I5 D&C Utilities EMP - Flora & Fauna Sub Plan.	VG	E	2	E2	Low
158		Minimise impacts on Flora & Fauna	Impact to flora & fauna	Impact to flora and fauna due to inappropriate vehicle/machine movement through reinstated construction easement	E	4	E4	High	Access to site to be in accordance with the Community Involvement Plan and existing control measures in Att I1 D&C Utilities EMP - Agricultural Management Sub Plan (specifically control Measures 7-13) and Site reinstatement and Rehabilitation Sub Plan.	VG	D	3	D3	Moderate

ENVIRONMENTAL CONSEQUENCE LEVEL DEFINITIONS

Consequence Level		1 - Negligible	2 - Minor	3 - Moderate	4 - Major	5 - Extreme
Category	**Sub Category**	**Minimal impact in a localised area within natural variability**	**Low impact in a localised or regional area with a functional recovery within less than 1 year**	**Medium impact in a localised or regional area with a functional recover of 1 to 5 years**	**High impact in a localised or regional area with a functional recovery within 5 to 10 years**	**Very high impact in a regional area with functional recover in greater than 10 years if at all**
Environmental	**Ecosystem Function (need to consider resilience and resistance)**	Alteration or disturbance to ecosystem interactions in the localised area, if any, unlikely to be detectable and within expected natural seasonal variation / occurrence.	Alteration or disturbance to ecosystem interaction in the localised or regional area, may be detectable but within expected natural annual variation / occurrence. Functional recovery within less than 1 year.	Alteration or disturbance to ecosystem interactions in the localised or regional area, detectable but within expected natural short-term variation / occurrence. Functional recovery within 1 to 5 years.	Alteration or disturbance to ecosystem interactions in the localised or regional area, detectable and beyond expected natural variation / occurrence. Functional recovery within 5 to 10 years.	Alteration or disturbance to ecosystem interactions in the regional area, substantially beyond expected natural variation / occurrence to irreversible. Functional recovery in greater than 10 years if at all.
	Fauna and Flora Communities and Species	Loss of individuals not apparent and without reduction in localised population viability (e.g. Mortality likely to be no greater than population experiences within natural annual variability).	Loss of small number of individuals without reduction in viability of population in the localised or regional area (e.g. Mortality likely to be no greater than population experiences within natural annual variability). Functional recovery within less than 1 year.	Loss of individuals leads to reduction in viability of population in the localised or regional area. Functional recovery within 1 to 5 years.	Loss of large number of individuals leads to a high impact on populations in the localised or regional area. Functional recovery within 5 to 10 years.	Long-term impact on populations in the regional area that may not be recoverable. Functional recovery in greater than 10 years if at all.
Social	**Aboriginal Heritage Sites**	No measurable impact on indigenous heritage sites in the project area.	Partial removal of one or more indigenous archaeological sites of low significance.	Complete or partial disturbance to between one and five indigenous archaeological sites of low to moderate significance.	Complete or partial disturbance to six or more indigenous archaeological sites of low-moderate significance.	Complete or partial disturbance to one or more indigenous archaeological sites of high significance.
	Historical Heritage Sites	No measurable impact on historical heritage sites.	Detectable impact to state or Commonwealth significant site with heritage values remaining largely intact.	Partial reduction in heritage value intrinsic to state or Commonwealth significant site.	Substantial reduction in heritage value intrinsic to state or Commonwealth significant site.	Complete loss of heritage value intrinsic to state or Commonwealth significant site.
	Maritime Heritage Sites	No measurable impact on maritime heritage sites.	Detectable impact to state or Commonwealth significant site with heritage values remaining largely intact.	Partial reduction in heritage value intrinsic to state or Commonwealth significant site.	Substantial reduction in heritage value intrinsic to state or Commonwealth significant site.	Complete loss of heritage value intrinsic to state or Commonwealth significant site.
	Health and Safety	Injury or illness treatable by basic first aid - no lasting effects on health.	Injury or illness requires professional medical assistance to treat.	Injury or illness requires admittance to hospital to treat.	Serious injury or illness requiring long term medical treatment.	Fatality or permanent disability as a result of injury or illness.
	Recreation	Temporary and localised impacts on recreation - no lasting effects.	Short term impacts on recreational activities within the localised area or regional area. Functional recovery within less than 1 year.	Impacts on recreational activities within the localised area or regional area that negatively impact on access to recreation opportunities and/or participation rates. Functional recovery within 1 to 5 years.	Impacts on recreational activities within the localised area or regional area that significantly negatively impact on access to recreation opportunities and/or participation rates. Functional recovery within 5 to 10 years.	Access to recreational activities within the regional area permanently reduced. Functional recovery in greater than 10 years if at all.
	Amenity (Physical factors e.g. Noise, air and water etc.)	Temporary localised impacts on amenity - no lasting effects.	Short term impacts on amenity to the localised area or regional area. Functional recovery within less than 1 year.	Impacts on amenity to the localised area or regional area that negatively alter perceptions of the area. Functional recovery within 1 to 5 years.	Impacts on amenity to the localised area or regional area that significantly negatively alter perceptions of the area. Functional recovery within 5 to 10 years.	Amenity of the regional area permanently negatively altered. Functional recovery in greater than 10 years if at all.
	Tourism	Limited and short-term reduction in tourist visitation not outside usual variation. No significant impact on tourism businesses. Region still seen as attractive place to visit. No recovery necessary.	Short-term reduction in tourism use. Recovery within less than 1 year.	Reduction in tourism use. Recovery within 1 to 5 years.	Large reduction of tourism uses. Business viability compromised across wide range of sectors with substantial business failure in both direct and flow-on sectors. Recovery within 5 to 10 years.	Permanent loss of iconic tourism assets of regional significance. Large flow-on effects to supporting businesses. Functional recovery in greater than 10 years if at all.
	Commercial Fishing	Limited and short-term reduction in activity within the localised area. No significant impact on businesses. No recovery necessary.	Short-term reduction in commercial activity, in the localised area or regional area. Functional recovery within less than 1 year.	Reduction of 5 - 30% in sustainable yield of the fishery in the localised area or	Reduction of 30 - 90% in sustainable yield of the fishery in the localised area or regional area. Functional recovery within 5 to 10 years.	Commercial fishing completely and permanently prohibited or destroyed in the regional area. Functional recovery in greater than 10 years if at all.
	Labour Markets	Limited and short-term impact on labour markets. No significant impact on business operations. No recovery necessary.	Short-term reduction in available local labour. Functional recovery within less than 1 year.	Medium-term reduction in available local labour. Functional recovery within 1 to 5 years.	Large reduction in available local labour. Business viability compromised across wide range of sectors. Functional recovery within 5 to 10 years.	Permanent loss of local labour. Large flow on effects to local businesses. Functional recovery in greater than 10 years if at all.