

Appendix A3

Environmental aspects, impacts and risk assessment

The identification of significant construction activities and potential hazards/ impacts that could eventuate during the construction of the Project is central to the selection of appropriate environmental mitigation measures.

The hazard identification process involved an assessment of all project activities and associated environmental aspects and resulted in the development of a list of potential environmental hazards and impacts. Once these potential impacts were identified, risk levels were assigned and the appropriate risk mitigation measures were allocated from the relevant sub-plans. Risk levels were assessed before and after the implementation of indicative mitigation measures.

The Fulton Hogan Risk Assessment Methodology used to evaluate the risk level for each potential environmental impact is provided below, followed by the Environmental Risk Assessment spreadsheet.

Risk Assessment Methodology

To be used during any required risk assessments for all Fulton Hogan activities including: JSEA/SWMS, CAMs cases, aspects and impacts assessments.

NOTE: All incidents involving noncompliance with the Golden Rules shall be reported and recorded as a high-risk incident.

Step 1 - Assess the potential consequence of the unwanted event:

	HEALTH & SAFETY	ENVIRONMENT & COMMUNITY	QUALITY & COST
Insignificant	<ul style="list-style-type: none"> ▪ Self-administered First Aid treatment or no-specific treatment 	<ul style="list-style-type: none"> ▪ No community complaints ▪ No corrective actions required ▪ No breach of regulation or consent 	<ul style="list-style-type: none"> ▪ Minor remediation or disturbance ▪ No interruption to work ▪ Negligible cost, or accept as is
Minor	<ul style="list-style-type: none"> ▪ First Aid Treatment Injury 	<ul style="list-style-type: none"> ▪ Impact confined to site ▪ Action/control required ▪ Warning letter from Authority ▪ An isolated community complaint (1) 	<ul style="list-style-type: none"> ▪ Short-term damage, moderate remediation ▪ Work interrupted ▪ Costs or consequential loss \$10k+ or 10% of margin.
Significant	<ul style="list-style-type: none"> ▪ Medical Treatment Injury ▪ LTI < 5 Working Days ▪ Restricted Work Injury 	<ul style="list-style-type: none"> ▪ Contained off-site environmental damage (e.g.: spill on road) ▪ Local media interest ▪ Repeat community complaints (2-5 p/a) ▪ Regulatory enforcement action (e.g.: fine, notice, order) 	<ul style="list-style-type: none"> ▪ Reversible impact rectified in house, substantial remediation ▪ Temporary site closure (less than a day) ▪ Costs or consequential loss \$25k+ or 25% of margin.
Major	<ul style="list-style-type: none"> ▪ LTI 5+ Working Days ▪ Hospitalisation 	<ul style="list-style-type: none"> ▪ Uncontained off-site environmental damage (e.g.: polluted water) ▪ Regional media interest ▪ Multiple community complaints (5+ p/a) ▪ Notification to authority required ▪ Civil prosecution 	<ul style="list-style-type: none"> ▪ Major impact, external assistance, large-scale remediation ▪ Temporary site closure (more than a day) ▪ Loss of accreditation ▪ Costs or consequential loss \$100k+ or 50% of margin.
Catastrophic	<ul style="list-style-type: none"> ▪ Fatality ▪ Permanent disability 	<ul style="list-style-type: none"> ▪ Long-term environmental damage ▪ National media interest ▪ Criminal prosecution 	<ul style="list-style-type: none"> ▪ Total replacement ▪ Permanent site closure or eviction ▪ Costs or consequential loss \$500k+ or total loss of margin.

Step 2- Determine the likelihood or probability of the unwanted event occurring:

Rare	This consequence has never been known to occur in Fulton Hogan Group or it is extremely unlikely that it could ever occur.
Unlikely	This consequence has occurred in Fulton Hogan Group 1-2 times in company history.
Possible	This consequence could well have occurred in Fulton Hogan Australia at some time in the past 10 years
Likely	This consequence could occur annually to several times per year in Fulton Hogan Australia
Almost Certain	This consequence could occur several times per year at this particular workplace

Step 3- Determine the level of risk by the matrix below:

LOW =	Green	MEDIUM =	Yellow	HIGH =	Red
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Potential Consequence	Catastrophic	Med 15	High 19	High 22	High 24	High 25
	Major	Med 10	Med 14	High 18	High 21	High 23
	Significant	Low 6	Med 9	Med 13	High 17	High 20
	Minor	Low 3	Low 5	Med 8	Med 12	High 16
	Insignificant	Low 1	Low 2	Low 4	Med 7	Med 11
		Rare	Unlikely	Possible	Likely	Almost Certain
Likelihood or Probability						

RISK	PARAMETERS
HIGH	[16 – 25] The activity MUST NOT proceed. Alternate controls put in place to reduce the risk rating to LOW or MEDIUM
MED	[7 – 15] The activity can proceed so long as the highest level and most appropriate risk control measures have been identified and implemented
LOW	[1 - 6] The activity may proceed with normal supervision after implementing the control measures

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ACTIVITY/ASPECT	HAZARD/SOURCE OF IMPACT	IMPACT	PRE-CONTROL RISK			MITIGATION MEASURES (ID provided under 'Environmental mitigation measures' in the relevant Sub-plan)	POST-CONTROL RISK		
			CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING
Erosion, sedimentation and water quality									
Vegetation clearing and topsoil stripping	Sediment laden runoff from disturbed areas Diesel/fuel spills	Reduced water quality in local waterways due to increased turbidity and sediment loading	Significant	Possible	Med 13	CSWQMM1 - CSWQMM9, CSWQMM10 - CSWQMM14	Insignificant	Possible	Low 4
		Contamination of surface water by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM87 - CSWQMM90	Minor	Unlikely	Low 5
Bulk earthworks	Sediment laden runoff from disturbed areas Diesel/fuel spills Mud tracking Groundwater seepage in excavations	Reduced water quality in local waterways due to increased turbidity and sediment loading	Major	Almost certain	High 23	CSWQMM1 - CSWQMM9, CSWQMM15 - CSWQMM24, CSWQMM25 - CSWQMM42, CSWQMM50 - CSWQMM60, CSWQMM61 - CSWQMM64, CSWQMM69 - CSWQMM77	Significant	Possible	Med 13
		Contamination of surface and groundwater by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM91 - CSWQMM96	Minor	Unlikely	Low 5
		Mud tracking on public roads resulting in road safety issues and community complaints	Significant	Likely	High 17	CSWQMM33	Insignificant	Possible	Low 4
		Uncontrolled discharges of potentially acidic or saline groundwater and altered groundwater flows	Major	Possible	High 18	CSWQMM78 - CSWQMM81	Minor	Possible	Med 8
Site access including temporary waterway crossings	Disturbance of creek beds Overclearing in riparian areas Fines from rockfill Mud tracking Diesel/fuel spills	Reduced water quality in local waterways due to increased turbidity and sediment loading	Major	Almost certain	High 23	CSWQMM1 - CSWQMM9, CSWQMM15 - CSWQMM24, CSWQMM25 - CSWQMM42, CSWQMM50 - CSWQMM60, CSWQMM61 - CSWQMM64, CSWQMM69 - CSWQMM77	Significant	Possible	Med 13
		Adverse impact on aquatic ecosystems	Significant	Likely	High 17	CSWQMM43 - CSWQMM49, CSWQMM61 - CSWQMM64	Minor	Possible	Med 8
		Road users safety concerns and community complaints	Significant	Likely	High 17	CSWQMM43 - CSWQMM49	Minor	Possible	Med 8
		Contamination of surface water by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM91 - CSWQMM96	Minor	Unlikely	Low 5
Culvert and drainage works	Sediment laden runoff Diesel/fuel spills Concrete slurry spills	Reduced water quality in local waterways due to increased turbidity and sediment loading	Major	Almost certain	High 23	CSWQMM1 - CSWQMM9, CSWQMM15 - CSWQMM24, CSWQMM25 - CSWQMM42, CSWQMM50 - CSWQMM60, CSWQMM61 - CSWQMM64, CSWQMM69 - CSWQMM77	Significant	Possible	Med 13
		Contamination of surface and groundwater by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM87 - CSWQMM90	Minor	Unlikely	Low 5
		Contamination of surface water by concrete slurry	Minor	Possible	Med 8	CSWQMM82 - CSWQMM86	Insignificant	Possible	Low 4
Services/utilities relocation	Sediment laden runoff Diesel/fuel spills	Reduced water quality in local waterways due to increased turbidity and sediment loading	Major	Likely	High 21	CSWQMM1 - CSWQMM9, CSWQMM15 - CSWQMM24, CSWQMM25 - CSWQMM42, CSWQMM50 - CSWQMM60, CSWQMM61 - CSWQMM64, CSWQMM69 - CSWQMM77	Significant	Possible	Med 13
		Contamination of surface and groundwater by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM91 - CSWQMM96	Minor	Unlikely	Low 5
Bridge construction	Sediment laden runoff Diesel/fuel spills Concrete slurry spills Curing compound spills	Reduced water quality in local waterways due to increased turbidity and sediment loading	Major	Likely	High 21	CSWQMM1 - CSWQMM9, CSWQMM15 - CSWQMM24, CSWQMM25 - CSWQMM42, CSWQMM50 - CSWQMM60, CSWQMM61 - CSWQMM64, CSWQMM69 - CSWQMM77	Significant	Possible	Med 13
		Contamination of surface water by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM91 - CSWQMM96	Minor	Unlikely	Low 5
		Contamination of surface water by concrete slurry	Minor	Possible	Med 8	CSWQMM82 - CSWQMM86	Minor	Unlikely	Low 5
		Contamination of surface water by curing compound	Minor	Possible	Med 8	CSWQMM82 - CSWQMM86	Minor	Unlikely	Low 5
Materials stockpiling - MULCH, TOPSOIL, ASS & ASR	Tanning leachate runoff Sediment laden runoff Acidic surface or groundwater	Contamination of surface water by tannins	Significant	Likely	High 17	CSWQMM35	Significant	Unlikely	Med 9
		Negative impact on aquatic ecosystems, i.e. habitat degradation, fish kills and weed invasion	Significant	Likely	High 17	CSWQMM43 - CSWQMM49, CSWQMM61 - CSWQMM64	Minor	Possible	Med 8
		Reduced water quality in local waterways due to increased turbidity and sediment loading from un stabilised stockpiles	Major	Almost certain	High 23	CSWQMM43 - CSWQMM49, CSWQMM61 - CSWQMM64	Significant	Possible	Med 13
Paving activities	Hydrocarbon spills	Contamination of surface water by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM91 - CSWQMM96, CSWQMM87 - CSWQMM90	Minor	Unlikely	Low 5
Water use/extraction	Dewatering of deep excavations Sediment laden water	Drawdown of local groundwater levels and reduced recharge rates	Significant	Possible	Med 13	CSWQMM78 - CSWQMM81	Insignificant	Possible	Low 4
		Reduced water quality in local waterways due to increased turbidity and sediment loading	Significant	Likely	High 17	CSWQMM1 - CSWQMM9, CSWQMM15 - CSWQMM24, CSWQMM25 - CSWQMM42, CSWQMM50 - CSWQMM60, CSWQMM61 - CSWQMM64, CSWQMM69 - CSWQMM77	Significant	Possible	Med 13
Maintenance of erosion and sediment controls, i.e. clean and dirty diversion drains and sediment basins	Sediment laden water	Reduced water quality in local waterways due to increased turbidity and sediment loading	Significant	Likely	High 17	CSWQMM1 - CSWQMM9, CSWQMM15 - CSWQMM24, CSWQMM25 - CSWQMM42, CSWQMM50 - CSWQMM60, CSWQMM61 - CSWQMM64, CSWQMM69 - CSWQMM77	Significant	Possible	Med 13

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Operation of ancillary facilities, including e.g. chemical storage, refuelling, concrete batching, materials processing sites.	Diesel/fuel spills, including those resulting from maintenance activities Chemical spills	Contamination of surface water by petroleum hydrocarbons	Minor	Possible	Med 8	CSWQMM87 - CSWQMM90	Insignificant	Possible	Low 4		
Noxious weed treatment	Herbicides	Contamination of surface water by herbicides	Minor	Possible	Med 8	CSWQMM91 - CSWQMM96	Insignificant	Possible	Low 4		
Concrete batching	Release of alkaline water from batch plants or from concrete washout activities.	Contamination of surface water by alkaline water	Minor	Possible	Med 8	CSWQMM5, CSWQMM6, CSWQMM97, CSWQMM98.	Insignificant	Possible	Low 4		
Flora and Fauna											
Earthworks, including vegetation clearing	Sediment laden runoff from disturbed areas Vehicular movements Vegetation clearing occurs outside the clearing limits	Fragmentation and loss of connectivity	Significant	Likely	High 17	CFFMM1, CFFMM2, CFFMM3.	Significant	Unlikely	Med 9		
		Loss of unexpected threatened EEC/species	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM4, CFFMM5, CFFMM6.	Major	Unlikely	Med 14		
		Loss of anticipated EEC/threatened species	Significant	Likely	High 17	CFFMM2, CFFMM7	Significant	Unlikely	Med 9		
		Loss of native vegetation/ fauna habitat	Significant	Likely	High 17	CFFMM1, CFFMM2, CFFMM8, CFFMM9, CFFMM10, CFFMM11.	Minor	Unlikely	Low 5		
		Terrestrial fauna mortality / injury	Significant	Likely	High 17	CFFMM1, CFFMM2, CFFMM13, CFFMM14, CFFMM15, CFFMM16.	Significant	Unlikely	Med 9		
		Invasion of weeds	Significant	Possible	Med 13	CFFMM1, CFFMM2, CFFMM19, CFFMM20, CFFMM21, CFFMM22, CFFMM23.	Significant	Unlikely	Med 9		
		Reduced water quality in local waterways and loss of fish	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM24, CFFMM25, CFFMM26, CFFMM27.	Major	Unlikely	Med 14		
Stockpiling	Sediment laden runoff from disturbed areas Vehicular movements	Spread of <i>Phytophthora cinnamomi</i>	Significant	Possible	Med 13	CFFMM1, CFFMM2, CFFMM28.	Significant	Unlikely	Med 9		
		Loss of unexpected threatened EEC/species	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM4, CFFMM5, CFFMM6.	Major	Unlikely	Med 14		
		Loss of native vegetation	Major	Possible	High 18	CFFMM1, CFFMM2, CFFMM22.	Major	Unlikely	Med 14		
		Invasion of weeds	Significant	Possible	Med 13	CFFMM1, CFFMM2, CFFMM19, CFFMM20, CFFMM21, CFFMM22, CFFMM23.	Significant	Unlikely	Med 9		
Works around and within watercourses	Vehicular movements Vegetation clearing occurs outside the clearing limits Sediment laden runoff from disturbed areas	Reduced water quality in local waterways and loss of fish	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM26.	Major	Unlikely	Med 14		
		Spread of <i>Phytophthora cinnamomi</i>	Significant	Possible	Med 13	CFFMM1, CFFMM2, CFFMM28.	Significant	Unlikely	Med 9		
		Fragmentation and loss of connectivity	Significant	Likely	High 17	CFFMM1, CFFMM2, CFFMM3.	Significant	Unlikely	Med 9		
		Loss of unexpected threatened EEC/species	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM4, CFFMM5, CFFMM6.	Major	Unlikely	Med 14		
		Loss of anticipated EEC/threatened species	Significant	Likely	High 17	CFFMM2, CFFMM7	Significant	Unlikely	Med 9		
		Loss of native vegetation/ fauna habitat	Significant	Likely	High 17	CFFMM1, CFFMM2, CFFMM11.	Significant	Unlikely	Med 9		
		Loss of fish passage	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM12.	Minor	Unlikely	Low 5		
		Terrestrial fauna mortality / injury	Significant	Likely	High 17	CFFMM1, CFFMM2, CFFMM13, CFFMM14, CFFMM15, CFFMM16.	Significant	Unlikely	Med 9		
		Loss of aquatic habitats	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM17, CFFMM18.	Major	Unlikely	Med 14		
		Invasion of weeds	Significant	Possible	Med 13	CFFMM1, CFFMM2, CFFMM19, CFFMM20, CFFMM21, CFFMM22, CFFMM23.	Significant	Unlikely	Med 9		
Air quality	Earthworks, including vegetation clearing	Reduced water quality in local waterways and loss of fish	Major	Likely	High 21	CFFMM1, CFFMM2, CFFMM24, CFFMM25, CFFMM26, CFFMM27.	Major	Unlikely	Med 14		
		Spread of <i>Phytophthora cinnamomi</i>	Significant	Possible	Med 13	CFFMM1, CFFMM2, CFFMM28.	Significant	Unlikely	Med 9		
		Loss of reusable material, such as top soil and backfill material	Major	Likely	High 21	AQMM1, AQMM2, AQMM8, AQMM9, AQMM10, AQMM11, AQMM12, AQMM14.	Significant	Possible	Med 13		
		Mud tracking on public roads resulting in road safety issues and community complaints	Major	Likely	High 21	AQMM1, AQMM2, AQMM7, AQMM8, AQMM9.	Significant	Possible	Med 13		
		Amenity impacts to sensitive receivers when dust is deposited on surfaces resulting in community complaints.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14		
		Reduced water quality in local waterways when dust is deposited in waterways.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14		
		Health and environmental impacts due to poorly maintained equipment	Minor	Possible	Med 8	AQMM1, AQMM2, AQMM11, AQMM12.	Minor	Unlikely	Low 5		
		Processing, crushing and screening	Mud tracking Dust deposited on surfaces, such as roofs Dust deposited in waterways	Mud tracking on public roads resulting in road safety issues and community complaints	Major	Likely	High 21	AQMM1, AQMM2, AQMM7, AQMM8, AQMM9.	Significant	Possible	Med 13
				Amenity impacts to sensitive receivers when dust is deposited on surfaces resulting in community complaints.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14
				Reduced water quality in local waterways when dust is deposited in waterways.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14
Health and environmental impacts due to poorly maintained equipment	Minor			Possible	Med 8	AQMM1, AQMM2, AQMM11, AQMM12.	Minor	Unlikely	Low 5		
Stockpiling, material loading and material haulage	Mud tracking Wind erosion Poorly maintained equipment	Mud tracking on public roads resulting in road safety issues and community complaints	Major	Likely	High 21	AQMM1, AQMM2, AQMM7, AQMM8, AQMM9.	Significant	Possible	Med 13		
		Amenity impacts to sensitive receivers when dust is deposited on surfaces resulting in community complaints.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14		
		Reduced water quality in local waterways when dust is deposited in waterways.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14		
		Health and environmental impacts due to poorly maintained equipment	Minor	Possible	Med 8	AQMM1, AQMM2, AQMM11, AQMM12.	Minor	Unlikely	Low 5		
Drilling and blasting	Dust deposited on surfaces, such as roofs Dust deposited in waterways	Amenity impacts to sensitive receivers when dust is deposited on surfaces resulting in community complaints.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14		
		Reduced water quality in local waterways when dust is deposited in waterways.	Major	Possible	High 18	AQMM1, AQMM2, AQMM3, AQMM4, AQMM5, AQMM6, AQMM7, AQMM10, AQMM13, AQMM14.	Major	Unlikely	Med 14		

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Concrete batching	Dust deposited on surfaces, such as roofs Dust deposited in waterways	Amenity impacts to sensitive receivers when dust is deposited on surfaces resulting in community complaints.	Major	Possible	High 18	AQMM1, AQMM2, AQMM10, AQMM15, AQMM16, AQMM17.	Major	Unlikely	Med 14
		Reduced water quality in local waterways when dust is deposited in waterways.	Major	Possible	High 18	AQMM1, AQMM2, AQMM10, AQMM15, AQMM16, AQMM17.	Major	Unlikely	Med 14
Waste and energy									
Demolition	Demolition waste including pipe work, bricks, buildings, corrugated iron, fibrous cements and pavements.	Inappropriate disposal of waste	Significant	Possible	Med 13	CWEMM1, CWEMM6, CWEMM7, CWEMM8, CWEMM9, CWEMM10, CWEMM19.	Significant	Unlikely	Med 9
		Greenhouse gas emissions due to consumption of energy from non-renewable resources, such as diesel.	Insignificant	Almost certain	Med 11	CWEMM21, CWEMM22, CWEMM25.	Insignificant	Likely	Med 7
		Cross-contamination of waste	Significant	Likely	High 17	CWEMM11, CWEMM19.	Significant	Possible	Med 13
Clearing and grubbing	Green waste	Inappropriate disposal of waste	Significant	Possible	Med 13	CWEMM1, CWEMM6, CWEMM7, CWEMM8, CWEMM9, CWEMM10, CWEMM19.	Significant	Unlikely	Med 9
		Waste received on site unlawfully	Significant	Likely	High 17	CWEMM3	Insignificant	Likely	Med 7
		Greenhouse gas emissions due to consumption of energy from non-renewable resources, such as diesel.	Insignificant	Almost certain	Med 11	CWEMM21, CWEMM22, CWEMM25.	Insignificant	Likely	Med 7
Site establishment and general construction works, including at ancillary facility sites	Surplus material. Packaging materials from items delivered to the site, such as pallets, crates. General office wastes generated by onsite personnel, such as paper, cardboard, beverage containers and food wastes. Effluent generated at site amenities during construction. Operation of site compounds and lighting.	Inappropriate disposal of waste	Significant	Possible	Med 13	CWEMM1, CWEMM6, CWEMM7, CWEMM8, CWEMM9, CWEMM10, CWEMM11, CWEMM16,	Significant	Unlikely	Med 9
		Litter	Minor	Likely	Med 12	CWEMM2 CWEMM11.	Minor	Possible	Med 8
		Excessive packaging on products delivered to site.	Minor	Likely	Med 12	CWEMM1, CWEMM5.	Minor	Possible	Med 8
		Excessive paper use.	Minor	Likely	Med 12	CWEMM1, CWEMM 18.	Minor	Unlikely	Low 5
		Paper from office cross-contaminated with food waste.	Minor	Likely	Med 12	CWEMM16.	Minor	Unlikely	Low 5
		Over-ordering of materials resulting in waste.	Minor	Likely	Med 12	CWEMM4.	Minor	Unlikely	Low 5
		Greenhouse gas emissions due to consumption of energy from non-renewable resources.	Insignificant	Almost certain	Med 11	CWEMM21, CWEMM23, CWEMM24.	Insignificant	Likely	Med 7
		Waste received on site unlawfully	Significant	Likely	High 17	CWEMM3	Insignificant	Likely	Med 7
		Cross-contamination of waste	Significant	Likely	High 17	CWEMM11, CWEMM16, CWEMM19.	Significant	Possible	Med 13
Earthworks	Soil and rock, unable to be reused within the Project. Exposure of contaminated soils.	Inappropriate disposal of waste	Significant	Possible	Med 13	CWEMM1, CWEMM6, CWEMM7, CWEMM8, CWEMM9, CWEMM10, CWEMM15.	Significant	Unlikely	Med 9
		Inefficient use of available resources.	Minor	Likely	Med 12	CWEMM13, CWEMM14.	Minor	Unlikely	Low 5
		Greenhouse gas emissions due to consumption of energy from non-renewable resources.	Insignificant	Almost certain	Med 11	CWEMM21, CWEMM22, CWEMM25.	Insignificant	Likely	Med 7
		Waste received on site unlawfully	Significant	Likely	High 17	CWEMM3	Insignificant	Likely	Med 7
		Increased greenhouse gas emissions due to the purchase of non-local products/services.	Insignificant	Almost certain	Med 11	CWEMM23.	Insignificant	Unlikely	Low 2
		Spread of contaminated waste	Significant	Unlikely	Med 9	CWEMM6, CWEMM7, CWEMM8, CWEMM9, CWEMM10.	Significant	Rare	Low 6
Plant and vehicle maintenance	Waste fuel, oil and chemical containers.	Inappropriate disposal of waste	Significant	Possible	Med 13	CWEMM1, CWEMM6, CWEMM7, CWEMM8, CWEMM9, CWEMM10, CWEMM12, CWEMM15,	Significant	Unlikely	Med 9
		Cross-contamination of waste	Significant	Likely	High 17	CWEMM11, CWEMM12.	Significant	Possible	Med 13
Aboriginal and non-Aboriginal Heritage									
Earthworks, including vegetation clearing	Ground disturbance, clearing, vibration from plant and equipment, non-adherence to exclusion zones, vehicle movement.	Damage/impacts to known heritage item/site	Major	Almost certain	High 23	CHMM1, CHMM3-CHMM29.	Major	Unlikely	Med 14
		Damage to unknown heritage item	Significant	Possible	Med 13	CHMM2, CHMM3, CHMM19, CHMM20, CHMM28, CHMM29.	Significant	Unlikely	Med 9
Processing, crushing and screening, stockpiling, site compound use, concrete batching, loading and haulage	Ground disturbance, over-clearing, vibration from plant and equipment, non-adherence to exclusion zones, vehicle movement.	Damage/impacts to known heritage item/site	Major	Almost certain	High 23	CHMM1, CHMM3-CHMM29.	Major	Unlikely	Med 14
		Damage to unknown heritage item	Significant	Possible	Med 13	CHMM2, CHMM3, CHMM19, CHMM20, CHMM28, CHMM29.	Significant	Unlikely	Med 9
Piling	Ground disturbance, vibration, non-adherence to exclusion zones, vehicle movements.	Damage/impacts to known heritage item/site	Major	Almost certain	High 23	CHMM1, CHMM3, CHMM5, CHMM6, CHMM8-CHMM15, CHMM19-CHMM20, CHMM28-CHMM29.	Major	Unlikely	Med 14
		Damage to unknown heritage item	Significant	Possible	Med 13	CHMM2, CHMM3, CHMM19, CHMM20, CHMM28, CHMM29.	Significant	Unlikely	Med 9
Drilling and blasting	Vibration	Damage/impacts to known non-Aboriginal heritage item/site	Significant	Almost certain	High 23	CHMM1, CHMM3, CHMM6, CHMM19, CHMM20, CHMM28, CHMM29, CHMM30.	Significant	Possible	Med 13
		Damage to unknown non-Aboriginal heritage item	Significant	Unlikely	Med 9	CHMM2, CHMM3, CHMM19, CHMM20, CHMM28, CHMM29.	Significant	Rare	Low 6
Noise and vibration									
Site establishment / landscaping	Noise and vibration generated during site establishment and landscaping	Noise from site establishment and landscaping activities causes disturbance and leads to community complaints	Major	Likely	High 21	CNVMM1, CNVMM2, CNVMM3, CNVMM4, CNVMM5, CNVMM6, CNVMM7, CNVMM8, CNVMM9, CNVMM10, CNVMM11, CNVMM12, CNVMM13, CNVMM14, CNVMM15, CNVMM16, CNVMM17, CNVMM18, CNVMM19.	Major	Unlikely	Med 14
		Vibration from excavation or compaction works causes disturbance or damage to structures and leads to community complaints	Major	Possible	High 18	CNVMM24, CNVMM25, CNVMM26, CNVMM27, CNVMM28, CNVMM29, CNVMM30, CNVMM31, CNVMM32, CNVMM34, CNVMM35.	Major	Unlikely	Med 14
Earthworks	Noise and vibration generated during earthworks	Noise from earthworks causes disturbance and leads to community complaints	Major	Likely	High 21	CNVMM1, CNVMM2, CNVMM3, CNVMM4, CNVMM5, CNVMM6, CNVMM7, CNVMM8, CNVMM9, CNVMM10, CNVMM11, CNVMM12, CNVMM13, CNVMM14, CNVMM15, CNVMM16, CNVMM17, CNVMM18, CNVMM19.	Significant	Possible	Med 13
		Vibration from excavation or compaction works causes disturbance or damage to structures and leads to community complaints	Major	Possible	High 18	CNVMM24, CNVMM25, CNVMM26, CNVMM27, CNVMM28, CNVMM29, CNVMM30, CNVMM31, CNVMM32, CNVMM34, CNVMM35.	Major	Unlikely	Med 14

**CEMP Appendix A3
Environmental Risk Assessment**

Piling works	Noise and vibration from piling activities	Noise from piling works causes disturbance and leads to community complaints	Major	Likely	High 21	CNVMM1, CNVMM2, CNVMM9, CNVMM20, CNVMM21, CNVMM22, CNVMM23.	Major	Unlikely	Med 14
		Vibration from impact piling works causes disturbance or damage to structures and leads to community complaints	Major	Likely	High 21	CNVMM24, CNVMM25, CNVMM26, CNVMM27, CNVMM28, CNVMM32, CNVMM34, CNVMM35.	Major	Unlikely	Med 14
Bridgeworks	Noise and vibration generated during bridgeworks including any piling	Noise from bridgeworks causes disturbance and leads to community complaints	Major	Possible	High 18	CNVMM1, CNVMM2, CNVMM3, CNVMM4, CNVMM5, CNVMM6, CNVMM7, CNVMM8, CNVMM9, CNVMM10, CNVMM11, CNVMM12, CNVMM13, CNVMM14, CNVMM15, CNVMM16, CNVMM17, CNVMM18, CNVMM19.	Major	Unlikely	Med 14
		Vibration from bridgeworks, including piling, leads to community complaints and/or damage to structures	Major	Possible	High 18	CNVMM24, CNVMM25, CNVMM26, CNVMM27, CNVMM28, CNVMM32, CNVMM34, CNVMM35.	Major	Unlikely	Med 14
Paving	Noise and vibration from pavement construction	Noise from paving works causes disturbance and leads to community complaints	Major	Possible	High 18	CNVMM1, CNVMM2, CNVMM3, CNVMM4, CNVMM5, CNVMM6, CNVMM7, CNVMM8, CNVMM9, CNVMM10, CNVMM11, CNVMM12, CNVMM13, CNVMM14, CNVMM15, CNVMM16, CNVMM17, CNVMM18, CNVMM19.	Major	Unlikely	Med 14
		Vibration from paving works causes disturbance or damage to structures and leads to community complaints	Major	Likely	High 21	CNVMM24, CNVMM25, CNVMM26, CNVMM27, CNVMM28, CNVMM29, CNVMM30, CNVMM31, CNVMM32, CNVMM34, CNVMM35.	Significant	Possible	Med 13
Out of Hours works	Noise outside of standard construction hours	Noise from works carried out outside of the standard construction hours results in community complaints	Major	Likely	High 21	OOHMM1-OOHMM21	Major	Unlikely	Med 14
Blasting	Overpressure and vibration from blasting Flyrock Cloudy day with wind blowing in the direction of nearby residents	Disturbance to sensitive receivers results in complaints	Major	Likely	High 21	CNVMM32, BMM2, BMM5, BMM8, BMM14,	Major	Unlikely	Med 14
		Damage to structures from vibration and airblast overpressure	Major	Possible	High 18	CNVMM31, CNVMM32, CNVMM33, CNVMM34, BMM1, BMM3, BMM4, BMM6, BMM7, BMM9, BMM10, BMM11, BMM12, BMM13, BMM16.	Major	Unlikely	Med 14
		Traffic impacts	Major	Possible	High 18	BMM15	Major	Unlikely	Med 14
Stockpiling, materials processing, concrete batching and other activities associated with the operation of ancillary facilities.	Noise and vibration from plant operations.	Extended operations of noise intensive activities at ancillary activities results in complaints	Major	Possible	High 18	CNVMM1-CNVMM22.	Major	Unlikely	Med 14
		Vibration generated by compaction works or other vibration intensive works results in complaints	Major	Possible	High 18	CNVMM2-CNVMM31, CNVMM33, CNVMM34.	Major	Unlikely	Med 14