

Dam Wall - Risk and Opportunity Assessment

Activity Description	Aspect	Attribute	Impact	Environment and Heritage																		Mitigation Measures
				Local									Regional									
				Immediate			Short Term			Long Term			Immediate			Short Term			Long Term			
				Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation Cleaning, mulching and stockpiling	Air	Potential degradation of local air quality due to the suspension of dust	3 Possible	3 Minor (impact)	M3 Possible	3 Possible	3 Minor (impact)	M4 Unlikely	3 Minor (impact)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	3 Minor (impact)	L5 Rare	3 Minor (impact)	L5 Rare	3 Minor (impact)	L5 Rare	L Maximise buffer distances to sensitive places (at least 1000m, subject to outcomes of detailed Air Quality Management Plan) Mulching facilities and stockpile areas to be sheltered from prevailing winds Utilise dust/wind fencing, as appropriate		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Storage, haulage and use of potentially contaminated materials	Land Contamination	Dust and spills from excavated/haulage of potentially contaminated materials	4 Unlikely	3 Minor (impact)	L4 Unlikely	4 Unlikely	3 Minor (impact)	L4 Unlikely	3 Minor (impact)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Potential impacts from contamination will be mitigated through a schedule of further investigations and remediation/ management activities that will be conducted according to the requirements of the EPA Guidelines and in consultation with EPA's Contaminated Land Unit		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Storage, haulage and use of potentially contaminated materials	Land Contamination	Chemicals, fuels, oils and any other substances that, if spilled would cause contamination of the land or water	4 Unlikely	3 Minor (impact)	L4 Unlikely	4 Unlikely	3 Minor (impact)	L4 Unlikely	3 Minor (impact)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Chemical storage will comply with Australian Standards and Material Safety Data Sheets (MSDS) requirements. MSDS for products kept on site will be readily available to employees and contractors.		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation clearing, mulching and stockpiling	Geomorphology	Increased sediment runoff resulting from construction activities	3 Possible	2 Moderate (impact)	M3 Possible	3 Possible	2 Moderate (impact)	M5 Rare	3 Minor (impact)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Appropriate timing and duration of construction activities to minimise exposure to wet season/wet weather conditions. Appropriate erosion and sediment control measures per the Queensland Guidelines for Erosion and Sediment Control		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Excavation of foundations for site buildings and preparation for site facilities and bunding	Geomorphology	Increased sediment runoff resulting from construction activities	3 Possible	2 Moderate (impact)	M3 Possible	3 Possible	2 Moderate (impact)	M5 Rare	3 Minor (impact)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Appropriate timing and duration of construction activities to minimise exposure to wet season/wet weather conditions. Appropriate erosion and sediment control measures per the Queensland Guidelines for Erosion and Sediment Control		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Excavation of foundations for site buildings and preparation for site facilities and bunding	Air	Potential degradation of local air quality due to the suspension of dust	3 Possible	3 Minor (impact)	M3 Possible	3 Possible	3 Minor (impact)	M4 Unlikely	3 Minor (impact)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Minimise extent of unsealed areas at any time Stabilise worked areas as soon as possible after completion of works Regular watering of areas during dry and windy conditions Install truck cleaning stations at site egress Perform visual inspection of trucks before travelling off-site Regularly clean (sweep) mud and material tracked onto public roads at the site egress Cover truck loads when travelling off site		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation clearing, mulching and stockpiling	Aquatic Flora and Fauna	Increased sediment runoff, increase in turbidity and/or suspended solids downstream and modification to instream habitat	3 Possible	3 Minor (impact)	M4 Unlikely	4 Unlikely	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Appropriate timing and duration of construction activities to minimise exposure to wet season/wet weather conditions. Appropriate erosion and sediment control measures per the Queensland Guidelines for Erosion and Sediment Control. Gradual clearing of vegetation from the inundation area		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Excavation of foundations	Aquatic Flora and Fauna	Increased sediment runoff, increase in turbidity and/or suspended solids downstream and modification to instream habitat	3 Possible	3 Minor (impact)	M4 Unlikely	4 Unlikely	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Appropriate timing and duration of construction activities to minimise exposure to wet season/wet weather conditions. Appropriate erosion and sediment control measures per the Queensland Guidelines for Erosion and Sediment Control. Gradual clearing of vegetation from the inundation area		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation clearing, mulching and stockpiling	Water Quality	Increased sediment runoff resulting from construction activities, increase in turbidity and/or suspended solids downstream	2 Likely	3 Minor (impact)	M4 Unlikely	4 Unlikely	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Appropriate timing and duration of construction activities to minimise exposure to wet season/wet weather conditions. Appropriate erosion and sediment control measures per the Queensland Guidelines for Erosion and Sediment Control		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Excavation of foundations for site buildings and preparation for site facilities and bunding	Water Quality	Increased sediment runoff resulting from construction activities, increase in turbidity and/or suspended solids downstream	2 Likely	3 Minor (impact)	M4 Unlikely	4 Unlikely	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Appropriate timing and duration of construction activities to minimise exposure to wet season/wet weather conditions. Appropriate erosion and sediment control measures per the Queensland Guidelines for Erosion and Sediment Control		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Construction of haul roads	Water Quality	Increased sediment runoff resulting from construction activities, increase in turbidity and/or suspended solids downstream	2 Likely	3 Minor (impact)	M4 Unlikely	4 Unlikely	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Appropriate timing and duration of construction activities to minimise exposure to wet season/wet weather conditions. Appropriate erosion and sediment control measures per the Queensland Guidelines for Erosion and Sediment Control		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation clearing, mulching and stockpiling	Aquatic Flora and Fauna	Potential loss of aquatic flora and fauna	3 Possible	3 Minor (impact)	M5 Rare	4 Unlikely	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Minimise construction footprint. Best practice management of construction to ensure this is achieved.		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation clearing, mulching and stockpiling	Noise and Vibration	Potential noise impacts on sensitive receptors	3 Possible	3 Minor (impact)	M3 Possible	3 Possible	3 Minor (impact)	M4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	L Community consultation to notify noise sensitive receivers before blasting. Noise mitigation measures on site cleaning equipment		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Excavation of foundations	Noise and Vibration	Potential noise impacts on sensitive receptors	3 Possible	3 Minor (impact)	M3 Possible	3 Possible	3 Minor (impact)	M4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	4 Insignificant (impact/benefit)	L4 Unlikely	L Community consultation to notify noise sensitive receivers before blasting. Noise mitigation measures on site cleaning equipment		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation clearing, mulching and stockpiling	Landscape Character & Visual Amenity	Potential for visual obstruction to existing views	1 Almost certain	2 Moderate (impact)	H1 Almost certain	2 Moderate (impact)	H3 Possible	3 Minor (impact)	M5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L Protect and enhance the landscape and visual amenity of the visual catchment during construction of the Project. Engage affected communities and individuals in the landscape design of the Project. Protection and management of native vegetation within the dam wall construction area footprint particularly downstream riparian vegetation and remnant native forest and bushland vegetation above the spillway		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Vegetation clearing, mulching and stockpiling (within construction footprint)	Terrestrial Flora and Fauna	Potential degradation and/or loss remnant vegetation	1 Almost certain	3 Minor (impact)	M1 Almost certain	3 Minor (impact)	M1 Almost certain	3 Minor (impact)	M1 Almost certain	4 Insignificant (impact/benefit)	L1 Almost certain	4 Insignificant (impact/benefit)	L1 Almost certain	4 Insignificant (impact/benefit)	L1 Almost certain	4 Insignificant (impact/benefit)	L1 Almost certain	4 Insignificant (impact/benefit)	L Vegetation Clearance Management plan will be implemented to prevent excessive clearing. Provide vegetation offsets for loss of significant remnant veg. Trees and larger shrubs will be cleared by cutting off near the ground leaving the roots, except where they may cause a safety hazard. Smaller bushes will be pushed over and piled for mulching/burning.		
Site establishment works, construction of site offices, batch plants, haulage routes and storage/stockpile areas	Construction of haul roads	Soils and Geology	Erosion and sediment transport	3 Possible	2 Moderate (impact)	M3 Possible	3 Possible	3 Minor (impact)	M3 Possible	4 Insignificant (impact/benefit)	L3 Possible	3 Minor (impact)	M3 Possible	3 Minor (impact)	M5 Rare	4 Insignificant (impact/benefit)	L5 Rare	4 Insignificant (impact/benefit)	L5 Rare	L Sediment Erosion Control Plans		

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				Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk	Likelihood	Con	Residual Risk					
Storage of chemicals and fuels within the construction footprint	Spill of petrochemicals or other toxic compounds	Aquatic Flora and Fauna	Potential degradation of aquatic ecology	4 Unlikely	2 Moderate (impact)	M	4 Unlikely	3 Minor (impact)		L5 Rare	4 Insignificant (impact/benefit)		L4 Unlikely	3 Minor (impact)		L4 Unlikely	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Appropriate handling, bunding and storage of potentially toxic materials. Clean up plan and materials for accidental spills. Best practice management of site.			
Storage of chemicals and fuels within the construction footprint	Spill of petrochemicals or other toxic compounds	Land Contamination	Potential for contamination of land	4 Unlikely	3 Minor (impact)		L4 Unlikely	3 Minor (impact)		L4 Unlikely	3 Minor (impact)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Chemical storage will comply with Australian Standards and Material Safety Data Sheets (MSDS) requirements. MSDS for products kept on site will be readily available to employees and contractors. Line and bund laydown areas to ensure that any potential contamination can be contained and disposed of in accordance with environmental protection legislation.			
Storage of chemicals and fuels within the construction footprint	Spill of petrochemicals or other toxic compounds	Water Quality	Potential degradation of water quality due to contamination of water	4 Unlikely	2 Moderate (impact)	M	4 Unlikely	3 Minor (impact)		L5 Rare	4 Insignificant (impact/benefit)		L4 Unlikely	2 Moderate (impact)	M	L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Appropriate handling, bunding and storage of potentially toxic materials. Clean up plan and materials for accidental spills. Best practice management of site.			
The movement of vehicles and machinery to site and within the construction footprint	Dust from haulage vehicles travelling along unsealed areas	Air	Potential degradation of local air quality due to the suspension of dust	3 Possible	3 Minor (impact)	M	3 Possible	3 Minor (impact)		M	4 Unlikely	3 Minor (impact)		L4 Unlikely	3 Minor (impact)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Install truck cleaning stations at site egress. Perform visual inspection of trucks before travelling off-site. Regularly clean (sweep) mud and material tracked onto public roads at the site egress. Cover truck loads when travelling off site.		
The movement of vehicles and machinery to site and within the construction footprint	Dust from vehicles tracking mud off the construction site onto adjacent local roads	Air	Potential degradation of local air quality due to the suspension of dust	3 Possible	3 Minor (impact)	M	3 Possible	3 Minor (impact)		M	4 Unlikely	3 Minor (impact)		L4 Unlikely	3 Minor (impact)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Install truck cleaning stations at site egress. Perform visual inspection of trucks before travelling off-site. Regularly clean (sweep) mud and material tracked onto public roads at the site egress. Cover truck loads when travelling off site.		
The movement of vehicles and machinery to site and within the construction footprint	Oil, fuel, hydraulic fluid, etc leakage at vehicle/machinery laydown areas	Land Contamination	Potential for contamination of land	4 Unlikely	3 Minor (impact)		L4 Unlikely	3 Minor (impact)		L4 Unlikely	3 Minor (impact)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Chemical storage will comply with Australian Standards and Material Safety Data Sheets (MSDS) requirements. MSDS for products kept on site will be readily available to employees and contractors. Line and bund laydown areas to ensure that any potential contamination can be contained and disposed of in accordance with environmental protection legislation.			
The movement of vehicles and machinery to site and within the construction footprint	Traffic generation	Social	Safety issues for pedestrians at school bus stops	3 Possible	1 Major (impact)	H	5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Incorporate in the design and construction of local and regional roads, as appropriate, stopping bays for school buses, develop and implement road safety education program for school students, where possible limit or avoid heavy vehicle movements along school bus routes during student pick-up and drop-off times; monitor school bus routes and identify alternate routes if required.			
The movement of vehicles and machinery to site and within the construction footprint	Transfer and spread of potentially contaminated material	Land Contamination	Potential for contamination of land	4 Unlikely	3 Minor (impact)		L4 Unlikely	4 Insignificant (impact/benefit)		L4 Unlikely	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Potential impacts from contamination will be mitigated through a schedule of further investigations and remediation/management activities that will be conducted according to the requirements of the EPA Guidelines and in consultation with EPA's Contaminated Land unit.			
The movement of vehicles and machinery to site and within the construction footprint	Traffic generation	Social	Potential safety issues motorists	3 Possible	2 Moderate (impact)	M	5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Develop and implement education and awareness program for local residents about changes to the local and regional road network.			
The movement of vehicles and machinery to site and within the construction footprint	Traffic generation	Noise and Vibration	Traffic noise impact at noise sensitive receivers	3 Possible	3 Minor (impact)	M	3 Possible	3 Minor (impact)		M	4 Unlikely	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Limit traffic to certain working hours.		
The movement of vehicles and machinery to site and within the construction footprint	Transfer and spread of weeds and pests	Terrestrial Flora and Fauna	Degradation of existing habitat and spread of weeds into disturbed areas	4 Unlikely	4 Insignificant (impact/benefit)		L4 Unlikely	4 Insignificant (impact/benefit)		L3 Possible	3 Minor (impact)		M	5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Prepare a weed management plan prior to the commencement of any construction or clearing activities to prevent the spread of declared weeds to and from the construction site.		
The movement of vehicles and machinery to site and within the construction footprint	Mechanical failure such as a hydraulic hose leak within the bed and banks of the Mary River	Water Quality	Decline in water quality	4 Unlikely	2 Moderate (impact)	M	4 Unlikely	3 Minor (impact)		L5 Rare	4 Insignificant (impact/benefit)		L4 Unlikely	2 Moderate (impact)	M	L5 Rare	4 Insignificant (impact/benefit)		L5 Rare	4 Insignificant (impact/benefit)		L	Appropriate handling, bunding and storage of potentially toxic materials. Clean up plan and materials for accidental spills. Best practice management of site.			
The movement of vehicles and machinery to site and within the construction footprint	Traffic generation	Transport and Access	Local congestion	3 Possible	2 Moderate (impact)	M	3 Possible	2 Moderate (impact)		M	3 Possible	3 Minor (impact)		M	3 Possible	3 Minor (impact)		M	3 Possible	2 Moderate (impact)		M	4 Unlikely	4 Insignificant (impact/benefit)	L	Prepare TMP to address the local and regional impact and safety issues.