# APPENDIX E

Mitigation Measures Table

| Ref | Impact/Issue | Mitigation Measures | Stage | Responsibility |
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| HYD1 | Water quality | A detailed Soil and Water Management Plan (SWMP) would be prepared and implemented as part of the CEMP. The SWMP would:<br>· assess and detail the requirements to comply with relevant policies guidelines, legislation and other approvals<br>· be developed in accordance with the principles and requirements in *Managing Urban Stormwater – Soils and Construction, Volume 1* (Landcom 2004) and other relevant volumes<br>· contain Erosion and Sediment Control Plans (ESCPs) for all work sites. ESCPs would be implemented in advance of site disturbance and would be updated as required as the work progresses and the sites change<br>· contain management procedures for activities, which may result in water pollution, or minimise the risk of erosion and sedimentation<br>· outline management requirements of excess materials including stockpiling and disposal options and requirements for unsuitable construction materials<br>· detail the review and inspection processes for onsite measures to mitigate erosion and sedimentation and water quality risks<br>· detail the responsibilities for the management and implementation of the SWMP.<br>An overarching ESCP and Progressive Erosion and Sediment Control Plan (PESCPs) would be developed for all disturbed areas.<br>The design of treatment measures would take into account local design rainfall rates and local soil erosion hazard (see Land, Soils and Erosion Assessment).<br>The SWMP would be site-specific and include the measures below, and any other measures required to prevent erosion, sediment loss and water quality impacts. | Contractor | Pre-construction, construction |
| HYD2 | Water quality | A SWMP incorporating ESCPs would contain, at a minimum:<br>· drawings of the site layout<br>· a narrative of how erosion control and soil and water management would be achieved onsite<br>· description of treatment measures<br>· description of treatment maintenance measures<br>· a construction schedule, and a description of how the plan would work through the various stages of construction<br>· design calculations for the treatment measures, including hydrologic estimations of runoff volumes and rates, and swale and sedimentation basin capacities. | Contractor | Pre-construction, construction |

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| HYD3 | Water quality | Install erosion and sediment controls prior to the commencement of works in accordance with the technical document by Landcom (2006), *Managing Urban Stormwater, Soils and Construction* (the Blue Book; and where applicable, the DPE Water Controlled Activity Guidelines, to:<br>· divert surface runoff away from disturbed soil and stockpiles<br>· retard flow velocities<br>· retain sediment generated from construction activities, within the construction sites.<br>· prevent pollution of waters, catchment areas upstream and downstream of the works areas, and other waterways and drainage systems<br>· establish works sites away from waterways and riparian zones and in line with DPE Water's Controlled activities – Guidelines for riparian corridors on waterfront land. | Contractor | Pre-construction, construction |
| HYD4 | Water quality<br>Chemical storage and spills | A site-specific spill management plan would be prepared and include the following requirements:<br>· Emergency spill sites should be kept at the site (vehicle kits).<br>· Refuelling of machinery should be undertaken in a dedicated area, with the construction compound appropriately protected as outlined in the spill management plan.<br>· Any chemicals and fuels should be stored in a bunded area at least 50 m from any waterway of drainage line.<br>· Any hazardous materials on site to be stored in the compounds and within impervious and bunded enclosures capable of storing 120% of the volume of material stored there<br>· Workers would be trained in the spill management plan and the use of spill kits. | Contractor | Pre-construction, construction |
| HYD5 | Water quality | A site plan identifying where sediment and erosion controls are installed and the type of controls to be used would be prepared and implemented and be available onsite. | Contractor | Pre-construction, construction |
| HYD6 | Water quality | The construction compound downstream of the dam wall is proposed to be constructed using material sourced onsite as per the concept presented in Appendix G1 Annexure E. Some fill may need to be imported for engineering reasons. This crossing would need to be designed to facilitate the underflow of the operational releases from CHD to supplement Tweed River Flows for extraction at Bray Park Weir. To convey water across this construction pad, temporary waterway crossings would be designed and implemented in accordance with *Controlled activities – Guidelines for instream works on waterfront land* (DPE 2022b):<br>· 'Outlet flow culverts' would convey intentional releases from the MLO via the valve house to Doon Doon Creek downstream from the construction pad. | Contractor | Detailed design, pre-construction, construction |

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| | | · 'Spillway culverts' would convey minor spillway discharges in the order of the 1 EY (exceedances per year) flow event from the toe of the spillway to a point in Doon Doon Creek downstream from the proposed construction pad. | | |
| HYD7 | Water quality | During the detailed design phase, the shear stress generated by the flow of water over the construction compound downstream of the dam wall would be determined via hydraulic modelling. Rock diameters would be specified such that the probability of mobilisation of the material is low. The pad design and rock selection would consider design storms up to a certain threshold (e.g. the 5% AEP or 1 in 20 years storm). | Contractor | Detailed design |
| HYD8 | Water quality | Construction access to the downstream face of the dam and the spillway would be created via importation of fill to the site as per Appendix G1 Figure E.3, as follows:<br>· Install temporary culverts from the valve house to a location in Doon Doon Creek, approximately 100 m north of the valve house.<br>· Install temporary culverts downstream from the existing spillway to a location approximately 100 m north of the valve house.<br>· Fill the existing creek bed to create construction access across both sets of culverts. | Contractor | Detailed design, pre-construction, construction |
| HYD9 | Water quality | Temporary culverts from the spillway should be designed during detailed design to prevent mobilisation of fill material (erosion) and transportation downstream during flow events, as follows:<br>· Hydraulic modelling of the proposed design surface and flows should determine likely shear stress.<br>· Rock of a suitable diameter should be selected such that mobilisation is a low likelihood. | Contractor | Detailed design |
| HYD10 | Water quality | Following completion of construction works, the construction pad would be partially removed, to remove the ongoing risk of erosion and mobilisation of materials. | Contractor | Construction |
| HYD11 | Concrete batching plant runoff and wastewater | The following water management measures for the batching plant would be developed before construction starts, and they would be documented as part of the SWMP:<br>· Maintaining separation of 'clean' rainfall from surfaces, which have contact with cement and concrete, and directing 'clean' rainfall runoff to the construction compound stormwater treatment train. This may be achieved through measures such as providing roofing over mixing, unloading and dusty areas and directing the runoff from the roof areas away from the batching plant.<br>· Sealing the batching plant surface with hardstand or paving so that local rainfall runoff within the plant site may be directed effectively to drains and sumps, and to prevent mud and pooling. | Contractor | Pre-construction |

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| | | · Installation of a first flush system for hardstand areas, which may receive dust drift or minor quantities spilt material. The first flush system would typically capture the first 20 mm of rainfall runoff and direct it to a holding area. Subsequent rainfall runoff would then be deemed clean and could be incorporated into the construction. compound stormwater management system<br>· Bunding chemical and liquid storage areas.<br>· Installing a vehicle washdown facility for vehicles moving in and out of the batching area.<br>· Installing a wastewater collection and recycling system to collect contaminated water from:<br>- agitator washout<br>- truck washing<br>- yard washdown<br>- contaminated stormwater<br>- concrete batching area<br>- slump stand<br>- any other wastewater from the batching plant operation.<br>· Directing process wastewater and contaminated stormwater to a settling pond, or series of ponds, such that the water can be reused in the concrete batching process. These ponds would be contained within the batching plant area and would not discharge to the laydown yard stormwater management system. The settling pond or series of ponds should be lined with an impervious liner capable of containing all contaminants found within the water they are designed to collect.<br>· Monitoring pond and sump water quantity and quality. | | |
| HYD12 | Water quality | Erosion and sediment control measures would be maintained and kept in place until works are complete and/or the area is stabilised. | Contractor | Pre-construction, construction |
| HYD13 | Water quality | Adequate procedures should be detailed in the SWMP, including notification requirements to Council and the EPA, for incidents that cause material harm to the environment. | Contractor | Pre-construction, construction |
| HYD14 | Water quality | For works undertaken within waterways, erosion and sediment control measures would be established, such as a continuous in-storage curtain. | Contractor | Pre-construction, construction |
| HYD15 | Water quality | Daily and post-rainfall visual inspections of sediment and erosion controls would be conducted. | Contractor | Pre-construction, construction |

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| HYD16 | Water quality | Sediment and erosion controls would be inspected before rain is expected and after rainfall, to assess the condition including whether sediment controls are well formed, clear of obstructions and drain freely. | Contractor | Pre-construction, construction |
| HYD17 | Water quality monitoring | The SWMP would include water quality monitoring requirements and outline a trigger action response plan to minimise downstream water quality and aquatic ecology impacts (e.g. turbidity, dissolved oxygen, salinity, metals).<br>The water quality monitoring plan should be prepared and implemented as per the surface water monitoring plan detailed in Appendix G1 section 7. | Contractor | Pre-construction, construction |
| HYD18 | Water quality | Local weather forecasts (for high rainfall, lightning events, high wind periods and fire risk) would be monitored and work scheduled according to predicted weather conditions. | Contractor | Pre-construction, construction |
| HYD19 | Flooding | In the event of flooding, construction works in affected areas would cease during flood events and would not commence until floodwaters have receded. Weather forecasts would be checked regularly so that equipment and materials in flood areas could be secured prior to heavy rainfall events. | Contractor | Pre-construction, construction |
| HYD20 | Water quality | The ESCP for the dam wall construction compound should cater for events up to the 1% AEP. | Contractor | Pre-construction, construction |
| HYD21 | Surface water and groundwater quality | The following would be located outside 1% AEP flood zone:<br>· concrete batching plant<br>· storage of dangerous goods including explosives<br>· construction laydown areas<br>· workers' accommodation. | Contractor | Pre-construction, construction |
| HYD22 | Surface water quality | To prevent fill mobilisation from spillway and dam wall access pad to Doon Doon Creek:<br>· Install culverts with capacity to pass minor flows.<br>· Utilise larger diameter rock which would be resistant to mobilisation. | Contractor | Pre-construction, construction |
| HYD23 | Surface water and groundwater quality | For construction of McCabes Bridge, the SWMP would include measures for pile bore effluent management.<br>Pile construction work would be undertaken when no rain is forecast. | Contractor | Pre-construction, construction |
| HYD24 | Water use | Water volumes required during construction should be identified during detailed design. Arrangements should be made with Council for supply from Clarrie Hall Dam. | Contractor | Pre-construction, construction |

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| HYD25 | Flow regime during construction | Construction of the new spillway should be completed before closing the existing spillway. | Contractor | Pre-construction, construction |
| HYD26 | Construction wash water | Construction wash water would be recycled using a series of tanks and clarifiers, or similar. | Contractor | Pre-construction, construction |
| HYD27 | Road works | Where road widening or realignment would result in new or extended culverts or other drainage features, rock energy dissipation or riprap armouring would be applied downstream in accordance with AustRoads (2013) drainage design guidelines to prevent runoff causing erosion. | Contractor | Pre-construction, construction |
| HYD28 | Water quality in the raised FSL | Where possible, vegetation within the new full supply inundation area would be cut to stump height and left in situ. The requirements and locations for any erosion protection works and vegetation clearing within the FSL would be determined during detailed design and be based on risks identified in this EIS. Some trees would not be removed due to landslip hazards, erosion hazard, BDAR advice, or other risks. | Contractor | Construction |
| HYD29 | Surface water and groundwater quality | Handling and storage of fuel and oil within the site would be in accordance with Australian Standards, AS1940-2004 – *Storage and Handling of Flammable and Combustible Liquids* and NSW Work Cover 2005 Code of Practice for Storage and Handling of Dangerous Goods to reduce the risk of any spills or environmental release. Above-ground fuel storage in a bunded facility would be implemented as required, and refuelling would occur over a hard stand area. | Contractor | Construction |
| HYD30 | Surface water and groundwater quality | Safety Data Sheets (SDS) would be kept in the site safety system for all chemicals used on site. The SDSs would contain information on the environmental impacts of the use of certain chemicals and include detail on emergency response, cleanup and disposal. Handling and storage of all chemicals within the Proposal site would be in accordance with the *Dangerous Goods Act 1975* (NSW), and Australian standards, including AS 1940-2004 – *Storage and Handling of Flammable and Combustible Liquids.* | Contractor | Construction |
| HYD31 | Surface water and groundwater quality | The detailed design phase of works would ascertain the depth to the water table in areas proposed to be quarried, or would commit to lateral expansion and the maintenance of the new quarry base at or above the current quarry base, to prevent intersection of the water table. | Contractor | Detailed design |
| HYD32 | Groundwater interception at the quarry | To avoid the interception of the water table in the fractured rock, it is recommended that quarry expansion occurs laterally, with the current depth of the quarry base maintained if possible. | Contractor | Construction |
| BIO1 | General | A Biodiversity Management Plan (BMP) would be implemented for retained vegetation and habitat adjacent to the Proposal area that includes (but is not limited to): | Contractor | Pre-construction, construction, operation |

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| | | · biosecurity protocols to control and manage weeds that may be exacerbated, spread or otherwise affected by the construction and operation of the Proposal<br>· protocols to monitor the vegetation condition and habitat values of retained vegetation<br>· provisions for corrective actions, should a decline in vegetation or habitat condition be detected.<br>The BMP would also include protocols to remove weeds within the Proposal area prior to inundation. | | |
| BIO2 | General | A Site Plan would be included in a Construction Environmental Management Plan (CEMP) and/or an Operational Environmental Management Plan (OEMP) and would include (but is not limited to):<br>· the extent of approved clearing and disturbance<br>· any relevant sensitive areas<br>· locations of approved stockpile and material laydown areas and site compounds.<br>This Site Plan would be placed in an accessible location to be viewed by all site personnel.<br>Construction crew would undertake an induction prior to commencement of work to inform them of sensitive biodiversity areas, including threatened species habitat and ecological communities. They would be informed of the areas bound to work in, delineated no-go areas and what to do in the case of an unexpected threatened species find. | Contractor | Pre-construction, construction, operation |
| BIO3 | Fire | Fire extinguishers would be accessible onsite. There would be limits to some works undertaken during hot, dry and windy conditions, to reduce the risk of fire. | Contractor | Pre-construction, construction, operation |
| BIO4 | Waterways | A Water Management Plan (WMP) would be established in consultation with DPE Water, the Environment Protection Authority (EPA) and Tweed Shire Council, and would include (but is not limited to):<br>· a surface water monitoring program<br>· spill management and response<br>· water quality trigger levels<br>· corrective actions and contingencies<br>· reporting requirements.<br>Responsibilities for all management actions would be detailed within the WMP. | Contractor | Pre-construction, construction, operation |

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| BIO5 | Fire ants | As part of the BMP, biosecurity measures would be implemented in accordance with the Biosecurity (Fire Ant) Emergency Order (No 8) 2024 made under the Biosecurity Act to minimise the potential for introduction of fire ant infestations. These measures would include (but would not be limited to):<br>· restrictions to the movement of vehicles, equipment and materials originating from Fire Ant Infested Areas or travelling through Fire Ant Movement Control Areas<br>· washdown of vehicles prior to entering the Proposal area. | Contractor | Pre-construction, construction, operation |
| BIO6 | Vehicle strike | A Construction Traffic Management Plan (CTMP) would be implemented to minimise the potential for animal strike during the construction phase, and would include (but is not limited to):<br>· the location and design of approved roadways<br>· speed limits<br>· education of staff during induction about abiding by above driving rules to reduce fauna strike, including periods when vehicle strikes are more likely, based on animal behaviour (e.g. sunrise and sunset). | Contractor | Pre-construction, construction |
| BIO7 | Sediment | Sediment and erosion controls would be established as part of the CEMP, OEMP and/or WMP. These controls would include (but are not limited to):<br>· installation of sediment fencing and traps in areas in which construction would be conducted in proximity to waterways or low-lying vegetation. | Contractor | Pre-construction, construction |
| BIO8 | Dust | Dust suppression would be established as part of the CEMP or OEMP and would be implemented as required. Dust suppression methods may include (but are not limited to):<br>· wetting down of unsealed roads and stockpiles<br>· reducing vehicle speeds in adverse climatic conditions<br>· use of dust sprays on crushing or screening plant at the quarry site. | Contractor | Pre-construction, construction |
| BIO9 | Disease | Hygiene measures should be implemented as part of the CEMP to minimise the risk of pathogen and diseases spread on site (including Chytrid fungus), and should include procedures for equipment, footwear and clothing. Works vehicles would be washed down prior to entering the works area. | Contractor | Pre-construction, construction |
| BIO10 | Fauna injury | Implementation of pre-clearing protocols would be conducted by a suitable qualified ecologist, including (but not limited to): | Contractor | Pre-construction, construction |

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| | | · inspection of hollows, buildings and other artificial structures for fauna occupancy (to be conducted immediately prior to clearance activities)<br>· removal of fauna individuals if found<br>· relocation of fauna to suitable habitat in adjacent and similar vegetation outside of the Proposal area. | | |
| BIO11 | Fauna injury | Implementation of clearing protocols, including (including but not limited to):<br>· the presence of a suitably qualified ecologist throughout all clearing works<br>· clearing to be conducted sequentially, moving outward, towards areas of retained vegetation to facilitate fauna refuge and prevent the creation of vegetation fragmentation<br>· hollow bearing trees that are felled to be inspected once on the ground, and if injured fauna is found, the individual is to be removed and taken to a veterinarian or wildlife clinic. Hollow bearing trees that are felled to be placed in proximity to retained vegetation and positioned with the hollows facing upward to allow fauna to escape overnight<br>· if temperatures exceed 35°C, clearing works will be reassessed by a suitably qualified ecologist to evaluate whether works should be postponed for animal welfare. | Contractor | Pre-construction, construction |
| BIO12 | Fauna habitat loss | Logs of removed trees are to be installed within retained, adjacent vegetation to provide fauna habitat, where practical. | Contractor | Pre-construction, construction |
| BIO13 | Loss of threatened flora species | Collection and replanting of seeds from threatened flora species and/or translocation of the individuals of threatened flora species within the Proposal area will be undertaken in adjacent vegetation. | Contractor | Pre-construction, construction |
| BIO14 | Loss of Mitchell's Rainforest Snail | Where possible, individuals of the Mitchell's Rainforest Snail species will be translocated to similar, adjacent vegetation to maintain the local population.<br>As per the expert report, collecting of Rainforest Snail individuals for translocation would require a concentrated effort conducted over several nights in and around wet weather. Collection may also be conducted diurnally to supplement the nocturnal effort, by targeting known microhabitats.<br>Translocation would be to similar habitat/microhabitat within the Tweed River drainage. | Contractor | Pre-construction, construction |
| BIO15 | Impacts to adjacent vegetation | Rehabilitation of the construction laydown areas following the completion of construction works if the area is not required for operational purposes. This would include the removal of any materials brought onto the site, such as gravel and building materials. | Contractor | Post-construction |

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| AQB1 | General | An Aquatic Biodiversity Management Plan (AQBMP) would be prepared and implemented as part of the CEMP. The AQBMP would address the applicable regulations of the BC Act, FM Act and EPBC Act and the following guidelines:<br>· Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (NSW Fisheries, 2003)<br>· NSW DPI Fisheries Fishway Design Guidelines 2015 - as relevant to any proposed offsetting<br>· Aquatic Ecology in Environmental Impact Assessment - EIA Guideline (DoP/Marcus Lincoln Smith 2003)<br>· Policy and Guidelines for Fish Habitat Conservation and Management – Update 2013 (DPI, 2013).<br>The AQBMP will include but not be limited to:<br>· measures to avoid and minimise adverse effects on biodiversity associated with the construction activities<br>· measures to minimise the impact of construction on aquatic ecology<br>· measures to avoid the introduction of weed and pest species<br>· measures to protect riparian land in order to maintain current integrity of water resources. | Construction contractor | Pre-construction, construction |
| AQB2 | Aquatic flora and fauna | Measures that would be included in the AQBMP and implemented are:<br>· avoiding the platypus nesting period (October to March), if possible<br>· using qualified ecologists to inspect construction areas along creek banks for platypus burrows before riparian vegetation clearing<br>· using qualified ecologists to salvage and translocate aquatic fauna if dewatering is required (inclusive of acquiring specific permits and animal ethics approval)<br>· minimising construction periods to reduce disruption to aquatic fauna, scheduling work during low flow periods<br>· conducting daily inspections of the worksite, especially around the water's edge, to check for entrapped aquatic fauna<br>· avoiding where possible removal of native riparian vegetation and ensuring bed, banks and riparian zone is progressively rehabilitated as soon as practicable following disturbance. | Design contractor, construction contractor | Detailed design, pre-construction, construction |

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| AQB3 | Offsets | Fish passage offsets will be provided by works, designed in consultation with DPI Fisheries, undertaken at Bray Park Weir must be completed prior to the completion of Clarrie Hall Dam raising.<br>DPI Fisheries may require further habitat-related offsets to compensate the loss of key fish habitat. The extent of impacts to fish habitats documented in this EIS will be used in determining suitable habitat offsets. | Council | Pre-construction, construction |
| PS1 | Impacts to Mount Jerusalem National Park | Revoked portion of Mount Jerusalem National Park is to be transferred to Tweed Shire Council pending subdivision, land title registration and the transfer of compensatory land. | Detailed design / pre-construction | Council |
| AH1 | General | An Aboriginal Cultural Heritage Management Plan (ACHMP) must be developed by a heritage specialist in consultation with the Registered Aboriginal Parties (RAPs) to provide the post-approval framework for managing archaeological mitigation and Aboriginal heritage within the Proposal area. The plan should include the following issues and consider guiding principles:<br>· processes, timing, communication methods and project involvement (e.g. onsite activities) for maintaining Aboriginal community consultation and participation through the remainder of the Proposal. This should include a grievance mechanism that is readily available and designed for use by the local Aboriginal community<br>· if not previously completed, discuss and identify any areas of design optimisation with the RAPs to avoid or further minimise harm to identified Aboriginal sites, objects and places<br>· detail descriptions and methods to avoid any inadvertent impacts to identified Aboriginal objects and/or sites and areas of archaeological sensitivity outside of the construction activities. This should include, but not be limited to, cultural inductions for all personnel and subcontractors outlining their location and significance, fencing and clear marking of heritage sites and zones of interest nearby proposed works, appropriate screening for sensitive and gender-specific areas where needed, and any additional requirements identified by the Aboriginal community. A suitable regime of monitoring these activities should also be outlined, including locations, methods, personnel and timing<br>· detail descriptions and methods of any additional investigative and/or mitigative archaeological actions that may be required before construction works start, or during the Proposal. These should include, but not be limited to, archival recording of all identified Aboriginal objects, sites and places, suitable recovery or relocation, documentation and analysis of any archaeological sites proposed for direct impacts<br>· description and methods for undertaking further Aboriginal cultural heritage assessment, investigation and mitigation of any areas of the Proposal that have changed following completion of the ACHA and/or during the final design and construction phases of the Proposal | Construction contractor | Pre-construction, construction |

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| | | · description and methods of post-excavation analysis and reporting of the archaeological investigations and activities implemented as part of the ACHMP.<br>· procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human remains during the Proposal<br>· procedures for the curation and long-term management of cultural materials recovered or relocated as part of the works outlined in the ACHMP and any preceding stages associated with the Proposal<br>· processes for reviewing, monitoring, and updating the ACHMP as the Proposal progresses. | | |
| AH2 | Heritage interpretation | A heritage interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the Proposal, and specifically Aboriginal heritage values across the project area, and to provide direction for potential interpretive opportunities for the Proposal on-or offsite (e.g. at Uki and/or Murwillumbah). This strategy should be made available for consultation and feedback with the RAPs. Following consultation and feedback on the strategy, a heritage interpretation plan would refine the strategy with content (visual and textual) and design details in order to allow the implementation stage. Further detail is included in Appendix J (Appendix A). | Design contractor, construction contractor | Detailed design, pre-construction, construction |
| AH3 | Cultural landscape | The Construction Environment Management Plan (CEMP), or equivalent, should reinforce how the cultural landscape is considered throughout the Proposal and detail the rehabilitation of the disturbance footprint. Rehabilitation of areas where infrastructure is not remaining after construction of the Proposal should be undertaken to determine suitable ecological communities and other factors in returning the cultural landscape as close to its current state as feasible. | Design contractor, construction contractor | Detailed Design, pre-construction, construction |
| AH4 | Communication and consultation | Consultation should be maintained with the RAPs during the finalisation of the assessment process and throughout the Proposal. | Design contractor, construction contractor | Detailed design, Pre-Construction, Construction |
| AH5 | General | A copy of the ACHA should be lodged with AHIMS and provided to each of the RAPs after finalisation. | Council | Lodgement of EIS |
| AH6 | Communication and consultation | Where the heritage consultant changes through the Proposal, suitable handover should be undertaken to minimise loss or mistranslation of the intent of the information, findings and future steps in heritage management occur. | Council | Ongoing |

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| HHA1 | General | An Historic Heritage Management Plan (HHMP) would be prepared and implemented as part of the CEMP that provides procedures for implementing the mitigation measures provided in this EIS.<br>The HHMP would include:<br>· locations of identified heritage sites, i.e. Crams Farm bails and dairy, Doon Doon Hall<br>· management measures, including responsibilities and actions<br>· an unexpected finds protocol<br>· inclusion of heritage awareness and management training within the site induction process for relevant personnel involved in site works<br>· a process and methodology for assessing areas not covered in the HAA. | Construction contractor | Pre-construction, construction |
| HHA2 | Training | All personnel must attend a site induction that includes identification of Aboriginal and historic heritage issues and requirements prior to the commencement of works (and/or the commencement of individual contracts). | Construction contractor | Pre-construction, construction |
| HHA3 | Unexpected finds | In the event that any unexpected heritage items, archaeological remains or potential relics of non-Aboriginal origin are encountered, works would cease immediately, Council would be informed, and the Unexpected Finds Procedure would be implemented.<br>Work would only recommence once the requirements of that procedure have been satisfied. | Construction contractor | Pre-construction, construction |
| HAA4 | Crams Farm | A no-go area to protect Doon Doon Hall and the Bails and Dairy would be implemented. | Construction contractor | Pre- construction, construction |
| HAA 5 | Local heritage | Council should consider the local heritage listing of built items Doon Doon Hall and the Bails and Dairy under future amendments to the Tweed Local Environment Plan. This would ensure the ongoing management of built items with consideration that public engagement and interaction with the site may increase during operation of the Proposal. | Council | Operation |
| SOC1 | Social Impacts | A Social Impact Management Plan (SIMP) is to be prepared for construction and operation of the Proposal to:<br>· enhance and refine mitigation, monitoring and management of social impacts over the life of the Proposal, and explain how unanticipated impacts would be addressed<br>· set out how the community can provide feedback as part of adaptive management<br>· describe requirements of performance-based and prescriptive conditions<br>· set out elements, indicators, baseline values, frequencies, triggers, stakeholders and responses. | Construction contractor, Council | Construction, operation |

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| | | The SIMP will contain a program to monitor predicted social impacts against actual impacts which describes, for each impact area:<br>· the desired outcomes in social terms<br>· the indicator(s) that will be used to monitor change<br>· the targets against which performance will be assessed<br>· the methods that will be used to monitor the social impact<br>· the frequency of monitoring<br>· the people responsible for monitoring<br>· the methods that will be used to respond to monitoring results. | | |
| LSE1 | General | A Soil and Water Management Plan (SWMP) would be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). The SWMP would identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction. The SWMP would:<br>· assess and detail the requirements to comply with relevant policies guidelines, legislation and other approvals<br>· be developed in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and other relevant volumes<br>· contain Erosion and Sediment Control Plans (ESCPs) for all work sites. ESCPs will be implemented in advance of site disturbance and will be updated as required as the work progresses and the sites change<br>· contain management procedures for activities, which may result in water pollution or to minimise the risk of erosion and sedimentation<br>· outline management requirements of excess materials including stockpiling and disposal options and requirements for unsuitable construction materials<br>· detail the review and inspection processes for onsite measures to mitigate erosion and sedimentation and water quality risks<br>· detail the responsibilities for the management and implementation of the SWMP<br>· be complementary to the Landscaping and Revegetation Plan and Rehabilitation Management Plan. | Contractor | Pre-construction, construction, post-construction |

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| LSE2 | Soil stripping and management plan | As part of the SWMP for the Proposal, soil management measures are recommended to ensure the preservation of soil resources, including:<br>· assessing topsoil depths to be stripped prior to stripping to minimise the mixing of topsoil and subsoil<br>· preserving as much of the topsoil as possible<br>· attempting to strip and manage different soils orders or mapping units separately<br>· avoiding mixing topsoil with subsoil during soil handling operations<br>· where subsoils exhibit variance of constraints with depth, considering managing subsoils in separate layers to minimise introduction of constraints higher into the soil profile<br>· avoiding stripping soil following heavy rain periods that leaves the soil structure saturated<br>· avoiding compaction of soil during stripping and stockpiling operations<br>· ameliorating topsoil and, where necessary, subsoil during stripping operations in accordance with a soil scientists' recommendations. Ameliorants should be applied prior to stripping of their respective layers, to maximise mixing of the ameliorants during the stripping process<br>· stockpiling topsoil separately from subsoil (if it is necessary to strip subsoil)<br>· ensuring reinstatement of soil horizons in the correct order and depths, where possible<br>· where practical and possible, locating the subsoils and topsoils so that stockpiled material is placed on the same underlying soil unit<br>· protecting stockpiles from erosion using soil stabilising polymers, cover crops or other forms of stabilisation<br>· revegetating long-term topsoil stockpiles with native plant community types to minimise stockpile water logging, the generation of anaerobic conditions, help maintain topsoil biological viability and to create a seed store<br>· testing stockpiled subsoil and topsoil to determine amelioration requirements prior to reinstatement<br>· importing of VENM/ENM into the quarry to provide materials for rehabilitation purposes. The VENM/ENM potentially has less desirable soil physical and chemical properties than the in situ subsoils and will need to be characterised and appropriately handled during rehabilitation works to ensure that it is placed in a suitable portion of the recreated soil profile. | Contractor | Pre-construction, construction, post-construction |
| LSE3 | Soil stripping and management | Stripping and saving of topsoil resources from disturbance areas that would be inundated to use for rehabilitation (if suitable) of other Proposal related disturbed areas. | Contractor | Construction |

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| LSE4 | Rehabilitation | A Rehabilitation Management Plan (RMP) would be prepared. This plan would cover post-construction rehabilitation and transition to operation. The RMP would identify final land uses, conceptual landforms, site-specific risks, rehabilitation methodologies, performance monitoring, objectives, criteria and maintenance programs. The RMP should include, but not be limited to, the risks and controls in Table 6-4 of section 6.8 of the EIS.<br>Final rehabilitation of lands would be undertaken in accordance with approved completion criteria. | Contractor | Pre-construction, construction, post-construction |
| LSE5 | Administrative controls<br>(for all areas) | It is recommended to implement erosion and sediment control measures and site rehabilitation and revegetation in accordance with industry standard practice comprising Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom 2004), Volume 2A, Volume 2C, Volume 2E (DECC 2008a, 2008b, 2008c) and Best Practice Erosion and Sediment Control (IECA 2008). Preparing an Overarching ESCP and Progressive Erosion and Sediment Control Plans (PESCPs) for all Proposal disturbances and phases, including:<br>· access roads<br>· internal roads and haul roads<br>· powerline tracks and pads<br>· any upstream and downstream coffer dams<br>· laydown and stockpile areas<br>· accommodation camp and associated facilities<br>· quarry areas<br>· dam construction site<br>· spoil disposal areas<br>· any existing dam decommissioning areas<br>· ancillary construction facilities such as the concrete batching plant.<br>The ESCPs would be prepared and certified by a suitably qualified and experienced certified professional in erosion and sediment control. Measures and principles would include:<br>· minimising the extent and duration of land disturbance<br>· controlling water movement through the site<br>· minimising soil erosion<br>· promptly stabilising disturbed areas<br>· maximising sediment retention on site | Contractor | Pre-construction |

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| | | · maintain drainage, erosion and sediment control measures<br>· monitor and adjust drainage, erosion and sediment control practices to achieve the desired performance standard<br>· construction of suitable watercourse crossings. | | |
| LSE6 | Avoid disturbance to waterways | Avoid disturbance of the riparian area to minimise sedimentation, bank damage and enhance soil and water quality. Instream works would be undertaken in accordance with state guidelines including:<br>· controlled activities – guidelines for riparian corridors on waterfront land<br>· controlled activities – guidelines for watercourse crossings on waterfront land<br>· controlled activities – guidelines for outlet structures on waterfront land<br>· controlled activities – guidelines for instream works on waterfront land | Contractor | Construction, post-construction |
| LSE7 | Avoid disturbance to waterways | Detailed design of the bridge crossing would include the specification of appropriate scour protection of the piers to the required industry standards including:<br>· Guide to Bridge Technology Part 8: Hydraulic Design of Waterway Structures | Contractor | Pre-construction, construction |
| LSE8 | Additional geotechnical investigation | Detailed geotechnical investigation suitable for construction in conjunction with detailed design phase of the Proposal would be undertaken, including:<br>· in situ weathering profile<br>· rock strength<br>· the quality and quantity of material needed<br>· stability concerns during cutting operations<br>· excavation and haulage techniques<br>· requirement for stockpiles<br>· proposed end-use objectives<br>· landslide risk. | Contractor | Pre-construction, construction |
| LSE9 | Quarry design | A quarry extraction plan would be developed in accordance with relevant standards and requirements outlined by the NSW Resources Regulator. Quarry stability would be confirmed by appropriately qualified geotechnical engineer. | Contractor | Pre-construction construction |
| LSE10 | Landslide risk management | A geotechnical investigation by a professional with specialist knowledge on landslide risk management would: | Contractor | Pre-construction, construction |

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| | | · identify potential landslide hazards and conduct an assessment and evaluation of associated risks<br>· verify that geotechnical works are incorporated within the engineered design<br>· verify that the sub-surface conditions exposed during construction are consistent with those included in the risk assessment<br>· provide evidence of conformance of geotechnical works within the construction of the proposed works. | | |
| LSE11 | Design and construction | Design and construction stages would consider:<br>· the requirement to stockpile materials and make suitable allowances for stockpiling of materials as required<br>· suitable design to ensure suitable long term topographical and geotechnical stability<br>· strength and quality of materials to ensure suitable material is available. | Contractor | Pre-construction, construction |
| LSE12 | General | A Contaminated Land Management Plan (CLMP) would be prepared and implemented as part of the CEMP. The plan would include, but not be limited to consideration of the following:<br>· capture and management of any surface runoff contaminated by exposure to the contaminated land<br>· further investigations required to determine the extent, concentration, and type of contamination, as identified in the site investigations<br>· management of the remediation and subsequent validation of the contaminated land, including any certification required<br>· measures to ensure the safety of site personnel and local communities during construction<br>· complete pre- and post-construction site assessments in areas to be used for project office compounds, depots, laydown areas, concrete batching plants and workforce accommodation in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (the ASC NEPM), and process for tracking excavated material and waste. | Contractor | Pre-construction, construction |
| LSE13 | General | Potentially contaminated areas directly affected by the Proposal would be investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the *Contaminated Land Management Act 1997*. This includes further investigations in areas of potential contamination identified in the proposed footprint. If contamination is posing a risk to human or ecological receptors is identified, a Remediation Action Plan would be prepared and implemented. | Contractor | Pre-construction, construction |

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| LSE14 | Contamination | The SWMP would include procedures to manage potentially contaminated material. | Contractor | Pre-construction, construction |
| LSE15 | Unexpected Finds | The discovery of previously unidentified contaminated material would be managed in accordance with an unexpected contaminated lands discovery procedure. The procedure would include:<br>· cease work in the vicinity<br>· initial assessment by an appropriately qualified environmental consultant and further assessment and management of contamination, if confirmed, in accordance with section 105 of the CLM Act. | Contractor | Pre-construction, construction |
| LSE16 | Handling of Hazardous Materials | Asbestos handling and management would be undertaken in accordance with an Asbestos Management Plan (as part of the Work Health and Safety Plan). | Contractor | Pre-construction, construction |
| LSE17 | Accidental spill | A site-specific emergency spill plan would be developed and would include spill management measures in accordance with relevant EPA guidelines. The plan would address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities. | Contractor | Pre-construction, construction |
| LSE18 | Spill management | Activities with the potential for spillage of hydrocarbon and other chemicals (such as refuelling and washing down of plant and equipment) would be undertaken away from water courses or in any location which drains directly to waters with appropriate temporary bunding.<br>Storage of fuels, oils and chemicals would be stored in suitably bunded areas in accordance with relevant legislation and Australian standards. Refuelling operations would not be left unattended. | Contractor | Pre-construction<br>Construction |
| LSE19 | Use of hazardous materials | The use of hazardous materials would be undertaken following a risk assessment in accordance with the Proposal Construction Hazard and Risk Management Plan. Risk assessments would include an environmental assessment to determine whether it is practical to use a chemical with a lower hazard level and the key controls to be implemented prior to use. | Contractor | Pre-construction<br>Construction |
| W1 | All waste | A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will detail the applicable regulations of the POEO Act, POEO Regulation and all applicable EPA guidelines.<br>The WMP will include but not be limited to:<br>· measures to avoid and minimise waste associated with the proposal<br>· classification of wastes and management options (reuse, recycle, stockpile, disposal) | Construction contractor | Pre-construction, construction |

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| | | · statutory approvals required for managing on- and offsite waste, or application of any relevant resource recovery exemptions<br>· waste management targets<br>· volume and type of waste streams to be generated by the Proposal<br>· hazardous waste management<br>· procedures for collection disposal of waste, including frequency and tracking requirements<br>· contingency measures in the event that a facility (e.g. Stotts Creek Resource Recovery Centre) cannot accept any more waste or recycling – recommended facilities include Lismore City Council Recycling and Recovery Centre, followed by Ballina Shire Council Waste Management Centre<br>· register of licenced waste and recycling facilities (consistent with Error! Reference source n ot found. of the EIS)<br>· resource and energy conservation<br>· environmental mitigation and management measures<br>· roles and responsibilities of site personnel, including training and communication of the WMP to construction staff<br>· procedures for storage, transport and disposal<br>· monitoring, record-keeping and reporting.<br>The contractor is to assume responsibility for the appropriate disposal of any waste generated. Adequate procedures will be established and detailed in the WMP, including notification requirements to the EPA, for incidents that cause material harm to the environment. The WMP will also follow the resource management hierarchy principles embodied in the *Waste Avoidance and Resource Recovery Act 2001*, as follows:<br>• Avoid unnecessary resource consumption.<br>• Recover resources (including reuse, reprocessing, recycling and energy recovery).<br>• Dispose (as a last resort). | | |
| | | All waste will be managed and disposed of in accordance with relevant Waste Classification Guidelines (NSW EPA, 2014) and government policies | Construction contractor | Construction |
| W2 | Resource recovery | Construction waste management will prioritise resource recovery, including:<br>· recovery of resources for reuse – reusable materials generated by the project will be segregated for reuse onsite, or offsite where possible, including: | Design contractor, construction contractor | Detailed design, pre-construction, construction |

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| | | - the original parapet wall located at the crest of the dam will be dismantled, stored and used in construction of the dam wall raising<br>- existing components at recreational facilities, such as benches, fences, shelters, for later reestablishment after completion of the main works the reuse of the major waste streams<br>· recovery of resources for reprocessing – cleared vegetation will be mulched or chipped onsite and used for landscaping, in the absence of a higher beneficial use being identified<br>· recovery of resources for recycling – recyclable resources (such as metals, plastics and other recyclable materials) generated during construction and demolition<br>· segregation of resources for recycling – the resources will be sent to an appropriate recycling facility for processing. | | |
| W3 | Unexpected waste materials | During detailed design, suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Lismore City Council Recycling and Recovery Centre could accept chemical and asbestos waste if Stotts Creek Resource Recovery Centre became unable to accept additional waste.<br>Areas will be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient space for stockpile storage. | Design contractor, Construction contractor | Detailed design, pre-construction, construction |
| W4 | Unexpected waste materials | Materials will be ordered on an as needed basis to minimise waste with no over-ordering. The development of the WMP during the detailed design and construction phase will outline the details of the material management. | Design contractor, construction contractor | Pre-construction, construction |
| W5 | Unlawful disposal of waste | No waste from the Proposal will be littered or illegally dumped. All waste will be collected by an appropriately licenced waste contractor or disposed of at an appropriately licenced waste disposal facility. | Construction contractor | Construction |
| W6 | Erosion and sedimentation | An Erosion and Sediment Control Plan (ESCP) will be prepared by the construction contractor and will include detailed measures for mitigation of erosion and sedimentation regarding waste. The ESCP will include measures specific to the management of waste, such as:<br>· excavation of spoil would occur in a manner that ensures slope stability and slope stabilisation methods would be utilised where required<br>· waste would be handled as per guidance detailed by the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014)<br>· storage and stockpiling of wastes within hardstand areas and covering spoil stockpiles during heavy rain events to prevent erosion and sedimentation | Construction contractor | Pre-construction, construction |

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| | | · storage of waste within impermeable areas/containers to prevent sedimentation entering the water supply<br>· storage of hazardous waste within bunded areas to prevent contamination<br>· transport of waste in covered and impermeable containers or truck bed to prevent leakage and sedimentation of waste. | | |
| W7 | Building and demolition waste | For building and demolition waste including concrete, VENM and/or ENM, and/or excavated material other than VENM, ENM or asbestos-containing material, for recycling, re-use, processing and/or disposal.<br>Refer to the EPA 'construction and demolition waste' toolkit available at https://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition<br>Classify waste onsite using the EPA Waste Classification Guidelines and maintain the following records:<br>· waste classification report<br>· sampling results<br>· statements of compliance<br>· reuse options for VENM onsite as part of rehabilitation and restoration works (if practicable).<br>Assess transportation requirements:<br>· Identify if waste tracking requirements apply, i.e. >10 tonnes transported outside NSW<br>· Loads must be covered during transport.<br>Maintain the following records:<br>· copy of the receival facility's EPL (available on public register), if required<br>· if no EPL, records showing the facility can receive the waste lawfully, e.g. a copy of the receival facility's development consent<br>· weighbridge receipts<br>· invoicing and payment receipts from the receival facility. | Construction contractor | Pre-construction, construction |
| W8 | Waste transport | Waste will be transported in covered trucks and containers where appropriate, and in accordance with relevant materials handling, transport and management standards. | Construction contractor | pre-construction, construction |

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| W9 | Grey water and sewerage | The amount of grey water and sewage to be generated from the construction workforce will be determined during detailed design. This will allow the quantity of portable toilets to be located at each construction area and accommodation site to be estimated. | Design contractor, construction contractor | Detailed design, pre-construction, construction |
| W10 | Grey water and sewerage | Portable toilets will be utilised during the construction stage at each construction compound site, for which sewage will be collected by an appropriately qualified and licenced waste contractor. Any discharge to the existing sewage system will be agreed with the Local Council. The location and liquid waste management will be confirmed during the detailed design phase of the Proposal. | Construction contractor | Construction |
| W11 | Grey water and sewerage | A Soil and Water Management Plan (SWMP) will be prepared for the Proposal to detail the management of grey water and sewage for the Proposal. | Construction contractor | Pre-construction, construction |
| W12 | Vegetation | Any cleared vegetation will be mulched and reused onsite where possible; otherwise, it will be temporarily stockpiled within the construction footprint and inundation area for future re-use, sale or composting. | Construction contractor | Pre-construction, construction |
| W13 | Concrete washout waste and cementitious wastewater | The CEMP and SWMP will detail concrete washout and cementitious wastewater management measures including:<br>· temporary storage in designated impervious areas in accordance with the ESCP<br>· recycling or disposal to an appropriately licenced resource recovery facility. | Construction contractor | Pre-construction, construction |
| W14 | Virgin excavated natural material (VENM) / excavated natural material (ENM) | The WMP will detail the management of VENM/ENM or spoil, including:<br>· procedures for handling and storing excavated rock<br>· stockpiling of material<br>· management of potentially or known contaminated soil/fill in accordance with the POEO Act<br>· procedures for characterising material not suitable for reuse prior to disposal<br>· a register of licenced facilities for disposal or offsite reuse of spoil that cannot be appropriately reused onsite. | Construction contractor | Construction |
| W15 | Recyclables | Designated, labelled and covered recycling areas will be made available to store recyclable materials for collection by an appropriately qualified waste contractor. The management of recyclable waste will be further detailed in the WMP.<br>All construction compounds will have segregated receptacles for waste for landfill and comingled recycling at minimum. | Construction contractor | Construction |

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| W16 | Food waste | Food waste will be segregated where possible and deposited into covered waste receptacles for collection by a licenced waste removal contractor for food organic and garden organic disposal at Stott's Creek Resource Recovery Centre. | Construction contractor | Construction |
| W17 | Chemical containers, grease/oil drums and oil filters | All hazardous wastes will be classified, stored in sealed contained within a bunded area and then removed and disposed of in accordance with the appropriate EPA regulations. Hazardous materials will only be removed by suitably qualified and licenced contractors for disposal at an appropriately licenced waste disposal facility.<br>Storage of hazardous waste, restricted solid waste or liquid waste (or a combination of these) on site at any time is not to exceed 5 tonnes; otherwise, an EPL under the POEO Act is required. | Construction contractor | Construction |
| W18 | Chemical spills | The SWMP will include the following mitigation measures:<br>· Oils, greases, and fuels will be stored in appropriately bunded site compounds outside of the determined riparian zone, where practical, and outside the intertidal area. These bunded site compounds will be located in well-drained areas, away from flood-prone areas, including minor channels. Materials should be stored in a designated area, under cover where possible. Servicing and repairs to vehicles, equipment and plant will be undertaken either offsite or in the designated and appropriately bunded location onsite in order to contain liquid wastes.<br>· Containment bunds should be constructed with provision for collection and storage of any spilt material. Designated waste containers will be clearly identified and regularly monitored and emptied. Liquid waste will be collected and disposed of by appropriately licenced contractors. Volumes and collection dates will be tracked and recorded. Final locations, bunding design and waste volumes will be identified in the CWMP and the Erosion and Sediment Control Plan at the detailed design phase of the Proposal.<br>· Washdown of equipment will occur away from riparian and intertidal areas. Staff facilities will be located to ensure effluent, including wash-down water, can be totally contained and will be treated within the site management area. Induction and training of all staff outlining the location and use of each facility and of their obligation to use them will be undertaken.<br>· Runoff from polluted hard surfaces including roadways and vehicle hardstand areas will be contained and treated prior to discharge. | Construction contractor | Pre-construction, construction |
| W19 | Lead paint | Lead paint will be identified through chemical testing of paintwork to be removed. Paint will then be removed in a controlled manner to minimise dust and exposure. This waste will then be disposed of at an appropriate licenced waste facility (e.g. Stott's Creek Resource Recovery Centre). | Design contractor, construction contractor | Detailed design, pre-construction, construction |

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| W20 | Asbestos containing material | Hazardous building materials assessments will be completed on all structures proposed to be demolished.<br>For asbestos waste (including asbestos containing soils) refer to the EPA 'construction and demolition waste' toolkit available at https://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition<br>Classify waste onsite using the EPA Waste Classification Guidelines and maintain the following records:<br>· waste classification report<br>· sampling results<br>· asbestos audit<br>· SafeWork NSW notification (if required)<br>· asbestos removalist licence<br>· clearance certificate<br>· sampling results<br>· statements of compliance.<br>Maintain the following records:<br>· WasteLocate consignment number (audit consignments) or consignment authorisation<br>· transport records (e.g. GPS tracker)<br>· copy of the receival facility's EPL (available on public register), if required<br>· If there is no EPL, records showing the facility has planning approval and an EPL to dispose of asbestos waste. The disposal facility must have a QR plate to scan for WasteLocate consignment<br>· weighbridge receipts<br>· invoicing and payment receipts from the receival facility.<br>A Hazardous Material and Asbestos Management Plan (HMAMP) will be prepared accordance with relevant legislation for the handling and disposal of asbestos if relevant. | Construction contractor | Pre-construction, construction |
| W21 | Waste tyres | Waste tyres are to be disposed of to a licensed waste facility or removed from site by a certified waste contractor. | Construction contractor | Construction |
| W22 | Restricted solid waste management | Prevention of spills and leaks that may cause restricted solid waste generation will be managed by using secure storage locations, bunding, and restrictions on the use, transfer and disposal of the chemicals onsite. Volumes of chemicals stored onsite will be minimised to prevent potential | Construction contractor | Pre-construction, construction |

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| | | leaks and spills. Hardstand materials may be used to prevent contact with soil. Spill kits will be available onsite to manage spills if they may occur. | | |
| CC-1 | Design-related impacts | Review and consider the planned and additional measures that have been identified in the climate change risk assessment and risk register and identify where specific design changes are potentially required to be addressed in the detailed design stage. | Design contractor | Detailed design |
| CC-2 | Operational-related impacts | Take steps to identify and integrate relevant planned and additional measures into operational requirements, as well as ensuring the ongoing monitoring and review of the climate change risk through design, construction and operational phases. | Tweed Shire Council | Operation |
| CC-3 | Climate change risk assessment and climate projection data review | Monitor the need to review and update the climate change risk assessment in alignment with the release of revisions to the NSW NARCliM modelling dataset (i.e. NARCliM 2.0). | Design contractor<br>Construction contractor | Detailed design, pre-construction, construction |
| GG-1 | Construction related GHG emissions | The construction works would be conducted to minimise GHG emissions as follows:<br>· Construction materials would be sourced, as much as possible, from within or close to the Proposal site to reduce fuel use from transport.<br>· The re-use of cleared material will be maximised.<br>· Appropriately sized equipment will be used for construction activities.<br>· Construction vehicles and equipment will be maintained in good working order, and according to manufacturers' specifications. | Construction contractor | Pre-construction, construction |
| GG-2 | Operation related GHG emissions (decomposition of organic matter) | Partial clearing of the new FSL would be undertaken during construction to reduce GHG emissions associated with inundation of the reservoir. The clearing would not include all trees, but selected areas or trees may be removed to improve water quality. The removal of some trees would not be possible due to, for example, landslip hazards or erosion. The locations of trees for removal would be decided during detailed design. | Design contractor<br>Construction contractor | Detailed design, pre-construction, construction |
| NV1 | General | A noise and vibration management plan is to be prepared and implemented that includes the identification of sensitive receivers and management measures documented in the EIS and conditions of approval | Construction contractor | Pre-construction |
| NV2 | Notification | · Notify landholders, and sensitive receivers likely to be affected by noise, and address concerns prior to commencement of construction work.<br>· All potentially noise affected residents would be notified of the construction details of the proposal (types of activities, hours of construction etc.) at least two weeks prior to | Construction contractor | Pre-construction, construction |

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| | | construction commencement. Potentially noise affected residents are all those within the minimum working distance of the work-site.<br>· Contact details for complaints and information would be provided.<br>· In the event that a noise or vibration complaint is received, it would be responded to within 24 hours.<br>· Complaints and associated responses would be documented and kept for future reference. | | |
| NV3 | Induction | All employees, contractors and subcontractors are to receive an environmental induction. The induction would include:<br>· all relevant proposal-specific and standard noise and vibration mitigation measures<br>· permissible hours of work<br>· map of nearest sensitive receivers to work site, noting more densely populated areas around the construction disturbance footprint.<br>· construction employee parking areas<br>· designated loading/unloading areas and procedures<br>· site opening/closing times (including deliveries). | Construction contractor | Pre-construction, construction |
| NV4 | Noise respite | · In accordance with the ICNG, where high levels of construction noise are required for periods of 4 hours or more in areas adjacent to residential sensitive receivers, 1 hour of noise respite would be provided for every 4-hour period. | Construction contractor | Construction |
| NV5 | Noise and vibration risk assessment | · The construction contractor would complete a risk assessment to determine if construction equipment and blasting has the potential to cause vibration impacts on adjoining residential properties, infrastructure or heritage items, including the scar tree near the spillway.<br>· The assessment would determine the appropriate size of construction equipment to be used, and if other management measures are required to minimise the potential for cosmetic damage and human comfort impacts based on the distances detailed in the EIS. | Construction contractor | Pre-construction, construction |
| NV6 | Vibration | · Where vibration causing works are to take place within the relevant safe working distances, the construction contractor would contact the occupants prior to works commencing to give adequate notice of the duration of works. | Construction contractor | Pre-construction, construction |
| NV7 | Equipment sound power | · Ensure relevant sound power levels can be achieved through acoustic design of the proposed equipment and enclosures. | Construction contractor | Pre-construction, construction |
| NV8 | Traffic | · Deliver materials, plant and equipment, and dispose of material from the site, during the specified times for construction activities. | Construction contractor | Pre-construction, construction |

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| NV9 | Equipment | · Position equipment to minimise impacts on neighbours. | Construction contractor | Pre-construction, construction |
| NV10 | Sundays and public holidays | · Only works that generate low noise and low traffic should be permitted on Sundays or public holidays | Construction contractor | Pre-construction, construction |
| NV11 | Plant items | · Minimise the number of plant items operating concurrently when in proximity to receivers | Construction contractor | Pre-construction, construction |
| NV12 | General | Adopt strategies set out in the AS 2436-2010 *Guide to Noise and Vibration Control on Construction, Maintenance and Demolition sites* for:<br>· universal work practices<br>· plant and equipment<br>· work scheduling<br>· relative effectiveness of noise controls. | Construction contractor | Pre-construction, construction |
| NV13 | Additional noise mitigation measures | Apply mitigation measures outlined in the Construction Noise and Vibration Guideline (RMS 2016) where exceedances are expected to occur. | Construction contractor | Pre-construction, construction |
| TT01 | General | A Traffic Management Plan (TMP) would be prepared in consultation with Tweed Shire Council, prior to the commencement of road upgrades and construction of the Proposal and implemented as part of the CEMP. The TMP would include measures to minimise traffic impacts, ensure public safety and would be prepared in accordance with:<br>· the RTA's manual, *Traffic Control at Work Sites*, issued December 2010<br>· the technical manual *Traffic control at work sites* by Transport for NSW (latest edition).<br>The TMP would include details on access routes to the site and traffic and access management including:<br>· information to drivers about the school bus routes along Kyogle Road<br>· direction to avoid compression braking near residential receptors<br>· direction to avoid heavy vehicle trips during school zone times (8.00 am–9.30 am and 2.30 pm–4.00 pm)<br>· consultation with relevant councils and road authorities to install school bus signs at suitable locations along construction routes if necessary to warn heavy vehicle drivers of student drop-off and pick-up areas<br>· responses to local climate conditions that may affect road safety such as fog, dust and wet weather. | Pre-construction, construction | Construction contractor |

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| | | The TMP would be prepared in consultation with affected landowners. | | |
| TT02 | General | Traffic routes and access would be designed in accordance with the EIS and conditions of approval, local Council requirements and TfNSW requirements to provide safe movement of all road users and to minimise disruption to local residents.<br>Traffic routes and access would be revised based on the construction staging and on traffic movements / numbers to and from the construction site. | Detailed design, pre-construction, construction | Contractor |
| TT03 | Access points | The contractor would assess the visibility and safety of all designated egress and access points from the construction sites, construction compounds, concrete batching plant and accommodation site, and develop appropriate traffic controls in consultation with Council, as part of the TMP. | Detailed design, pre-construction | Contractor |
| TT04 | Kyogle Road and Clarrie Hall Dam Road intersection | The requirement for a basic right turn treatment (BAR) on Kyogle Road west approach, and a shortened auxiliary left turn treatment (AUL(s)) on Kyogle Road east approach would be reviewed during detailed design and designed accordingly, if required.<br>When the locations of the accommodation camp and concrete batching plant are confirmed during detailed design, if a lower order treatment is required at this intersection, a BAR and BAL treatment would be provided. | Detailed design, pre-construction | |
| TT05 | Tarcoola Lane, Doon Doon Road and Commissioners Creek Road | The TMP would include:<br>· Drivers are to pass opposing traffic on Tarcoola Lane, Doon Doon Road and Commissioners Creek Road where there is adequate road width. It is acknowledged that there are some narrower sections of road where drivers will need to take care when passing. | Pre-construction, construction | Contractor |
| TT06 | General | Construction vehicles would only be allowed to enter, operate within, or exit from a traffic flow, in a manner which does not endanger the public and under suitably designed appropriate traffic control measures. | Pre-construction, construction | Construction contractor |
| TT07 | General | Before works start, existing access tracks, road and culverts that would be used by heavy vehicles would be assessed for adequacy and upgraded where necessary. Appropriate drainage would be provided for any new roads such as Commissioners Creek Road and Clarrie Hall Dam Road during the works to ensure that vehicle movements do not cause erosion and sedimentation of nearby waterways. | Detailed design, pre-construction | Contractor |
| TT08 | Permits and licences | The contractor would obtain from Council and/or TfNSW necessary permits for road openings or occupancy and comply with all conditions. | Pre-construction, construction | Construction contractor |
| TT09 | Landowner notification | Prior notification (at least 2 weeks) would be provided to any landowner where access to their property may be temporarily impacted due to the Proposal. | Pre-construction, construction | Contractor |

| Ref | Impact/Issue | Mitigation Measures | Stage | Responsibility |
|---|---|---|---|---|
| TT10 | Community consultation | Any disturbance to adjacent landowners/residences as a result of vehicle movements and noise would be minimised, and all access gates would be in their original condition following completion of the works. | Detailed design, pre-construction, construction | Contractor |
| TT11 | Site induction | The site induction would inform all site personnel including contractors, of the approved traffic routes and access.<br>Approved traffic routes would be included in contracts with suppliers of materials or equipment to the site. | Pre-construction, construction | Construction contractor |
| TT12 | General | The TMP would specify construction vehicle speed limits (signage) within work sites and along access routes. Consideration would be given to local road condition, road surfaces, traffic volumes and other relevant factors. | Detailed design, pre-construction, construction | Contractor |
| TT13 | Signage | The following signage would be installed:<br>· Site-specific traffic and safety signage would be installed that has been customised to the location, road conditions and construction methodology.<br>· Signage for the entire construction duration would be maintained to inform both construction staff and the public (motorists and pedestrians) of the construction activities and plant movement. | Pre-construction, construction | Construction contractor |
| TT14 | Community consultation | There would be consultation with neighbours and/or affected landholders and community in Uki regarding traffic volumes and timing of vehicle movement, to minimise any inconvenience that may arise. | Pre-construction, construction | Construction contractor |
| TT15 | General | All reasonable and practical steps would be implemented to separate pedestrians and vehicles at the worksite, such as through the installation of fencing, flagging or plant exclusion zones. | Pre-construction, construction | Contractor |
| TT16 | Line of sight | Vegetation on Kyogle Road at its intersections with Clarrie Hall Dam Road and Doon Doon Road would be trimmed to achieve the required sight distance. | Pre-construction | Contractor |
| TT17 | Road maintenance | A road maintenance program will be developed in consultation with the relevant road authorities to be undertaken during construction. The program would include route inspections of all the affected local roads. Road pavements, would be restored to their pre-construction condition at the completion of construction. | Pre-construction, construction | Contractor |
| TT18 | Restriction of heavy vehicle movement during school hours | Heavy vehicle travel through Kyogle Road, Doon Doon Road and Commissioners Creek Road from 8:00 am to 9:30 am and from 2:30 pm to 4:00 pm on school days would be avoided. | Construction | Contractor |