
Appendix A – Updated mitigation measures

Updated mitigation and management measures

The EIS for the Billabong Creek Regulators proposal, identified a range of environmental mitigation and management measures that would be required to avoid or reduce environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the proposal have been revised. Should the proposal proceed, the environmental management measures in Table A1 will guide the subsequent phases of the proposal. Additional and/or modified environmental mitigation and management measures to those presented in the EIS have been underlined and deleted measures, or parts of measures, have been struck out.

Table A.1: Updated mitigation and management measures

ID	Impact	Environmental safeguards	Responsibility	Timing
Groundwater				
GW01	Construction Dewatering	The need for construction dewatering will be reviewed if the construction methodology changes substantially from that assessed in the Groundwater Assessment Report and deeper excavations are proposed.	NSW DCCEEW / Contractor	Detailed design / Construction
GW02	Groundwater drawdown	Groundwater level monitoring utilising the existing monitoring wells should be undertaken on a monthly basis at wells BH201 (Hartwood) and BH3 (Wanganella) for five years.	WaterNSW	Operation
GW03	Groundwater quality	Annual water quality monitoring for salinity (as electrical conductivity) and pH. at wells BH201 (Hartwood) and BH3 (Wanganella) for five years.	WaterNSW	Operation
GW04	Groundwater quality	Site environmental management, inclusive of spill response measures, will be in accordance with broader WaterNSW existing environmental management procedures and policies	WaterNSW	Operation
Geomorphology				
GEO1	Erosion and sedimentation	Regulator structures designed to avoid erosion around and downstream of structures through erosion protection. Regulator structure include energy dissipation measures to manage erosion immediately downstream including concrete aprons and rock armouring of bed and channel banks.	NSW DCCEEW	Detailed design
GEO2	General	A Construction Environment Management Plan (CEMP) will be prepared to include site specific control measures to manage potential erosion or sedimentation impacts from instream works as set out below.	Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
GEO3	Erosion and sediment	A construction Erosion and Sediment Control Plan (ESCP) will be prepared as part of the construction soil and water management plan (CSWMP) and will detail the specific erosion and sediment control measures to be implemented within the proposal area, in accordance with the principles and requirements of Managing Urban Stormwater – Soils and Construction, Volumes 1 (Landcom 2004) and 2C (DECC, 2008) (known as the Blue Book). Controls should include but not be limited to: • Instream control measures: – Floating silt fences for instream works. – Undertaking work when flows are low/dry and minimise the duration of works within the watercourse as far as practicable. – Weir removal and new regulator construction to be undertaken in two phases; half of the creek needs to remain unobstructed to maintain continuous flow of water while construction is undertaken on the other side. Cofferdams, sumps and pumps would be used to separate and dewater the half of the creek undergoing construction. – Minimise clearance of vegetation and retain existing vegetation as much as possible. – Contingencies are in place for moderate to high flows, particularly during instream construction works. – Wherever possible, prefabricate instream structural elements prior to instream installation. • Terrestrial control measures – Install sediment controls around stockpiles and borrow areas to contain coarse soil and sediment, as applicable to prevent sedimentation of watercourses. – Placement of stockpiles away from the watercourse (at least 20 metres of creek channels) and be covered when not in use to prevent sediment runoff, and consider whether covering of stockpiles containing coarse soil and sediment is also required.	Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		– Stabilise exposed soil where applicable with the appropriate structural materials and media for the construction activities (e.g. stabilisation matting, rock armour or vegetation). – Regular, at least daily, visual water quality monitoring of waterways adjacent to the project area during construction, to assess the effectiveness of silt fences, so they can be fixed if necessary. – Erosion and sediment controls established prior to commencement of vegetation clearing or earthworks where practical.		
GEO4	Reinstatement	Disturbed areas will be revegetated as soon as practical, progressively. Rehabilitation at construction sites to include replacing topsoil.	Contractor	Construction
GEO5	Erosion and sediment	Erosion and sediment controls, will be maintained post construction until disturbed areas are stabilised. Undertake two post-construction visual assessments of the regulator over two years to identify and assess any erosion, so it can be addressed if required.	WaterNSW	Operation
Surface water quality and aquatic ecology				
SWQ01	General – CEMP	Preparation of a CEMP to outline the measures to manage water quality impacts associated the construction works is recommended. If risks are to be minimised, it is recommended the CEMP include, but not be limited to, the following: • Measures to minimise/manage erosion and sediment transport within the disturbance area and off site with consideration of contingencies for moderate to high rainfall events. • Measures to manage stockpiles, including locations and sediment controls and stabilisation. • Detail procedures to capture, contain and dispose of concrete waste. • Measures to manage saline soils.	Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		- Measures to manage water (including dewatering) and groundwater ingress from construction, including water collection protocols, and water quality standards to be achieved for release to downstream environment. This should be included in a dewatering management plan that would be prepared as a subplan to the CEMP. - Staging of works to consider and respond to forecast high flows and heavy rainfall events. - Management of the spread of weeds and pests. - Management of spills and leaks.		
SWQ02	General – CEMP	Measures to ensure all waterway crossings will be constructed in accordance with the Guidelines for Controlled Activities on Waterfront Land – riparian corridors (NRAR, 2018), Guidelines for watercourse crossings on waterfront land (DPI, 2012), Guidelines for riparian corridors on waterfront land (DPI, 2012) and Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (DPI, 2003).	Contractor	Pre-construction
SWQ03	Erosion and sediment management during construction	A construction Erosion and Sediment Control Plan (ESCP) will be prepared as part of the construction soil and water management plan (CSWMP) and will detail the specific erosion and sediment control measures to be implemented within the proposal area, in accordance with the principles and requirements of Managing Urban Stormwater – Soils and Construction, Volumes 1 (Landcom 2004) and 2C (DECC, 2008) (known as the Blue Book). Controls should include but not be limited to: - Instream control measures - Floating silt fences for instream works. - Undertaking work when flows are low/dry and minimise the duration of works within the watercourse as far as practicable	Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		– Weir removal and new regulator construction to be undertaken in two phases; half of the creek needs to remain unobstructed to maintain continuous flow of water while construction is undertaken on the other side. Cofferdams, sumps and pumps would be used to separate and dewater the half of the creek undergoing construction. – Minimise clearance of vegetation and retain existing vegetation as much as possible. – Contingencies are in place for moderate to high flows, particularly during instream construction works. – Wherever possible, prefabricate instream structural elements prior to instream installation.		
SWQ04	Spills or leaks during construction	Site specific controls to be developed to manage the risk of accidental spills or leaks of fuels, oils and chemicals (such as hydraulic oils), or concrete, during construction. These controls are to be documented in the CEMP and would include: • emergency spill response procedure in accordance with NSW DCCEEW incident management protocols • site specific controls to reduce the risk of the release of potentially harmful chemicals from spills or leaks entering waterways • storage of hazardous materials such as oils, chemical and refuelling activities in bunded areas within contractor's temporary work areas • bunded receptacles for concrete waste including concrete slurries and washout water provided at the work sites to capture, contain and appropriately dispose of any concrete waste at a suitably licenced waste facility. These will be located as far from waterways as feasible.	Contractor	Pre-construction
SWQ05	Concrete works management	To avoid ingress of concrete waste material into downstream watercourse, the CEMP would outline procedures to capture, contain and appropriately dispose of any concrete waste. Concrete structures would be pre-fabricated prior to installation instream, where practicable.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
SWQ06	Water quality monitoring	To detect and manage the degradation of water quality due to construction activities, a water quality monitoring program will be designed and implemented and appended to the CSWMP. As a minimum water quality monitoring would include: • Water quality monitoring upstream and downstream of the proposal site prior to and during construction. In particular, monitoring of dissolved oxygen to ensure suitable saturation levels and turbidity to determine effectiveness of erosion and sediment controls. • Any groundwater that enters excavations within the works sites will be tested and, if suitable, pumped into nearby waterways or otherwise transferred into a treatment pond and treated before being discharged into nearby waterways. The CEMP will include water quality criteria for any water to be discharged into nearby waterways.	Contractor	Construction
SWQ07	Fish passage management during construction	Minimise the duration of fish passage restrictions (e.g. cofferdams).	Contractor	Construction
SWQ08	Weed and pathogen management	Develop and implement a weed and pathogen control plan that includes the following requirements and measures to mitigate spread: • Vehicle, personnel, material and equipment hygiene protocols (including measures required to prevent the spread or transmission of Chytrid Fungus as per Hygiene protocols for the control of diseases in Australian frogs (Murray et al. 2011). • Weed, pest animal and pathogen management and monitoring and reporting requirements during the construction period. • Weed and pathogen management and monitoring and reporting requirements should be documented. Measures must be auditable and linked to management outcomes.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		- Identify any listed weeds (identified in NSW WeedWise) that have been found in the construction area as part of the ecological assessment and assess the risk of additional spread prior to relocating topsoil. Implement measures to manage this risk when clearing, grading, and reinstatement activities. - To a reasonable extent when conducting clearing and grading activities, check that vehicles and plant equipment are free of soil (dust/clods) and vegetation prior to entry and exit from the construction area. - Evaluate disturbed areas post-construction and implement rehabilitation in accordance with the appropriate safeguards. - To avoid and minimise spread of weeds and pathogens, all vehicles and plant undertaking construction works directly in the watercourse must be cleaned and free of debris prior to entering a waterway, and on exit if working between multiple waterways		
SWQ09	Aquatic habitat disturbance minimisation	- Limit disturbance to riparian vegetation and snags to the assessed clearing areas and avoid complete removal wherever possible. - Any large woody debris and snags (>3m long or 30cm wide) that have to be removed from the construction footprint should be moved to a suitable location upstream or downstream of the site in consultation with a qualified ecologist and WaterNSW.	Contractor	Construction
SWQ10	Reinstatement	- Disturbed areas will be revegetated with endemic riparian and floodplain species (replacing like for like) to be undertaken as soon as practical, progressive reinstatement. - Rehabilitation at construction sites to include replacing topsoil from the site stockpile.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
SWQ11	Pest control	Food waste accumulated on site will be stored in inaccessible bins and disposed off-site regularly so that the waste doesn't attract predatory pests such as cats and foxes.	Contractor	Construction
SWQ12	Fauna Management	Implement the following fauna management procedures during construction including: • Prepare a dewatering plan for coffer dams to avoid potential impacts to aquatic fauna such as fish stranding. • As a requirement of the dewatering plan, native aquatic fauna entrained within the coffer dams will be captured and relocated to a nearby suitable habitat by qualified aquatic ecologists. • Development and implementation of handling and salvage protocols for terrestrial and aquatic fauna during construction, including requirements for legislative permits and authorisation requirements of wildlife handlers. This will include procedures for pre-clearing, clearing surveys and procedures should fauna or nests/burrows be found during these surveys and removal is required. The protocols will include details of requirements, including wildlife handler/ecologist/NSW DPI permits.	Contractor	Construction
SWQ13	Fauna Management	All fencing must be fauna friendly to minimise risk of injury from collision and include provision of egress points, for example: • Temporary to exclude construction: High visibility string of bunting or plastic mesh (not transparent) attached to star pickets with plastic caps (or weighted posts that avoid ground penetration in culturally sensitive areas). • Temporary to exclude wildlife (e.g. from open trenches): Fencing stays located inside the exclusion area, or with high visibility mesh to guide wildlife away from obstructions and potential traps. Shade cloth or other suitable deterrent attached to the lower 50 cm of the outside of the exclusion zone and weighted to the ground. • No barbed or razor wire will be used.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		Trench management, including avoiding open trenches overnight where practicable. Where trenches cannot be closed, check trenches at the start and end of each day (i.e. dawn/dusk), and consider feasibility of measures (e.g. ramps) to aid animal escape.		
SWQ14	Fauna Management	Implement measures to minimise noise, vibration and lighting impacts on known threatened fauna species and habitat, including: - Avoid unnecessary light spill across a broader area than required to avoid attracting insects and subsequently their predators (bats and birds). - Avoiding night works during periods of high insect/bird/bat activity (October to March) as far as reasonably practical, so as to minimise disturbance to fauna communication, foraging and other behaviours that depend on sound and darkness.	Contractor	Construction
SWQ15	Hydrology	Once the proposal structures have been in operation through an appropriate operational cycle, the Yanco Creek System Operations Plan will be updated <u>reviewed</u> taking into account system monitoring results, identified operating risks and ecological response.	NSW DCCEE/WaterNSW	Operation
SWQ16	Erosion and sediment control during operation	- Erosion and sediment controls, including semi-permanent controls along the creek bed and bank as required, will be maintained post construction until disturbed areas are stabilised. - Undertake two post-construction visual assessments of regulators over two years to identify and assess any erosion caused by the structures, so it can be addressed if required.	WaterNSW	Operation
SWQ17	Spills or leaks during operation	Site environmental management, inclusive of spill response measures, will be in accordance with broader WaterNSW operation and maintenance and environmental management procedures for operations.	WaterNSW	Operation

ID	Impact	Environmental safeguards	Responsibility	Timing
SWQ18	Fish passage management during operation	- Develop and adhere to fishway maintenance protocols in line with NSW DPI – Fisheries advice. - Conduct fishway monitoring in line with advice from NSW DPI - Fisheries at each regulator once the construction is complete to ensure they are operating as anticipated.	WaterNSW	Operation
SWQ19	Water quality management downstream of the new regulators	To assess changes in water quality following the construction of the proposal and implementation of the Yanco Creek System Operations Plan, develop and conduct a water quality monitoring program for Billabong Creek, downstream of Wanganella and Hartwood Regulators. This may be incorporated into existing catchment-based monitoring programs at long-term monitoring locations, if not already covered.	WaterNSW	Operation
SWQ20	Fauna management during operation	- All operation personnel would be informed of environmental responsibility with respect to the protection of aquatic and terrestrial fauna and their habitat. - All vehicles driven by operation personnel would be required to remain on designated tracks and not drive through water.	WaterNSW	Operation
Terrestrial flora and fauna				
B01	General biodiversity impacts	Flora and fauna management controls will be included within the CEMP. This will include that specifies measures, processes, and responsibilities to minimise the potential for biodiversity impacts during construction. and incorporating recommendations below and expanding on specific details where necessary. The CEMP will specify requirements for the implementation of these measures and provide for audit and compliance.	Proposal ecologist	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
B02	General biodiversity impacts	Flora and fauna management controls will be included within the WaterNSW operational <u>environmental</u> management procedures. This will include measures, processes, and responsibilities to minimise the potential for biodiversity impacts during operation of the proposal incorporating recommendations <u>the measures listed below</u> . and expanding on specific details where necessary. <u>The OEMP will specify requirements for the implementation of these measures and provide for audit and compliance.</u>	WaterNSW	Operation
B03	General	All workers will be provided with an environmental induction prior to starting work on site. This will include information on the biodiversity values of the site, protection measures to be implemented to protect native biota and penalties for breaches.	Construction contractor and Proposal ecologist	Construction
B04	Removal of vegetation and habitat resources	Plans will be prepared showing areas to be cleared and areas to be protected, including exclusion zones and protected habitat features in the vicinity of work areas.	Proposal ecologist	Pre-construction
B05	Removal of vegetation and habitat resources	A pre-construction assessment of the local <i>Swainsona murrayana</i> population will be conducted including: • consideration of whether the construction period coincides with the August to November flowering period for the species (Cth. DCCEEW 2024b) • consideration of prevailing rainfall conditions in the preceding cool season and assessment of the likely health and extent of the local population • supplementary survey as appropriate to confirm the extent of above-ground plants in the local population • definition and implementation of additional impact and avoidance measures as appropriate potentially including delayed construction activity, adjustment of CAZs, exclusion fencing and/or translocation.	Proposal ecologist	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
B06	Removal of vegetation and habitat resources	A pre-construction assessment of the local Southern Bell Frog population will be conducted including: • consideration of whether the construction period coincides with the Spring-Summer breeding and higher adult frog activity period for the species • consideration of prevailing rainfall and river conditions and assessment of the likely presence and extent of potential breeding habitat in ephemeral wetlands • supplementary survey as appropriate to confirm the extent of occupied breeding habitat and/or mobile adult frogs in the local population • definition and implementation of additional impact and avoidance measures as appropriate potentially including delayed construction activity, adjustment of CAZs, exclusion fencing, procedures for dewatering of wetlands and/or translocation.	Proposal ecologist	Pre-construction and construction
B07	<u>Removal of vegetation and habitat resources</u>	<u>A pre-construction assessment of threatened bird breeding habitat will be conducted including:</u> • <u>consideration of whether the construction period coincides with the Spring-Summer breeding periods for the Little Eagle, Pink Cockatoo and other threatened bird species</u> • <u>inspection of the known Little Eagle nest tree location, species polygon areas, and any other suitable habitat containing candidate nest trees within 200 m of the proposal footprint</u> • <u>supplementary monitoring as appropriate to confirm the presence of occupied nest trees, breeding activity, and behaviour of birds in the vicinity of the proposal footprint</u> <u>definition and implementation of additional impact and avoidance measures as appropriate to ensure that occupied nests are not disturbed, potentially including delayed construction activity, adjustment of CAZs and exclusion fencing.</u>	<u>Proposal ecologist</u>	<u>Pre-construction and construction</u>

ID	Impact	Environmental safeguards	Responsibility	Timing
B078	Removal of vegetation and habitat resources	Prior to the commencement of any work in or adjoining areas of native vegetation, a survey will be carried out to mark the construction impact boundary. The perimeter of this area would be fenced using high visibility fencing and clearly marked as the limits of clearing. All vegetation outside this fence line will be clearly delineated as an exclusion zone to avoid unnecessary vegetation and habitat removal and the transmission of weeds or disease. Fencing and signage will be maintained for the duration of the construction period. Fencing will be designed to allow fauna to exit the site during clearing activities.	Proposal ecologist	Pre-construction and construction
B089	Unexpected direct impacts to threatened flora and fauna	An unexpected finds protocol will be implemented including prepared to detail measures to be undertaken if threatened flora and fauna not previously recorded on site are detected during clearing or construction activities.	Proposal ecologist	Construction
B0910	Harm to resident fauna	The following protocols for the management of fauna and habitats <u>will be implemented in accordance with</u> would be included in the CEMP. These will include (if required): • a procedure for the felling of hollow-bearing trees to prevent or minimise mortality of fauna • salvage of hollows and logs where practicable • management of any trenches or drill sites to prevent fauna from becoming trapped or injured • any additional measures for the management of frog breeding habitat as appropriate to seasonal conditions and the outcomes of pre-construction surveys.	Contractor and Proposal ecologist	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
B101	Harm to resident fauna	Pre-clearing surveys will be undertaken prior to and during construction by a suitably qualified ecologist. The surveys and inspections, and any subsequent relocation of species, will be undertaken in accordance with the CEMP. Specific surveys include: • an initial pre-clearance survey of the proposal footprint, undertaken by a suitably qualified ecologist prior to the commencement of any clearing activities including: – surveys for roosting microbats in any man-made structures to be removed – searches for nests in vegetation to be removed – identification of fauna refuge sites potentially requiring fauna management during removal, including hollow-bearing trees, woody debris as well as human made material such as metal sheets – a daily pre-clearance fauna survey of the day's work area, undertaken by a suitably qualified ecologist prior to the clearing of native vegetation – monitoring of clearing activities and observation, rescue, treatment and/or relocation of any resident fauna as appropriate.	Contractor and Proposal ecologist	Construction
B112	Harm to resident fauna	Monitoring of clearing activities would include particular focus on habitat features that may harbour threatened species that are vulnerable to <u>direct or indirect</u> harm including during: • felling of habitat trees that may contain roosting threatened birds or microbats • earthworks in or near floodplain depressions that may contain breeding habitat for the Southern Bell Frog • earthworks affecting cracking clay soils or woody debris that may harbour Grey Snakes or Southern Bell Frogs. • <u>construction activity in the vicinity of the known Little Eagle nest tree or any other nest sites observed in or near the proposal footprint.</u>		

ID	Impact	Environmental safeguards	Responsibility	Timing
B123	Harm to resident fauna	A post-clearing report will be prepared documenting all animals that are handled, or otherwise managed, within the site. Data to be recorded includes: • date and time of the sighting and details of the observer • species • number of individuals recorded • adult/juvenile • condition of the animal (living/dead/injured/sick) • management action undertaken (e.g. captured, handled, taken to vet) • results of any management actions (e.g. released, placed in a nest box, euthanised, placed with carer). An inventory of hollows and fallen timber salvaged and relocated will be maintained.	Contractor and Proposal ecologist	Construction
B134	Pathogen spread and establishment	All machinery entering the site will be appropriately washed down and disinfected prior to work on site to prevent the potential spread of weeds and disease in accordance with the NSW best practice Protocols to protect priority biodiversity areas (DPIE 2020f). Protocols to prevent introduction or spread of chytrid fungus will be implemented following the NSW hygiene guidelines for wildlife (DPIE 2020f). <u>Vehicle washdown logbooks will be maintained.</u>	Contractor	Construction
B145	Spread of weeds	Declared priority weeds will be managed according to requirements of the NSW <i>Biosecurity Act</i>. Soil material and stripped groundcover vegetation with the potential to contain priority weeds will not be removed from the proposal footprint. Soil disturbance would be avoided as much as possible to minimise the potential for spreading weeds.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
B156	Soil loss hazard – erosion of soils and sediment due to clearing during construction	A construction Erosion and Sediment Control Plan (ESCP) will be <u>implemented</u> prepared as part of the construction soil and water management plan (CSWMP) and will detail the specific erosion and sediment control measures to be implemented within the proposal area, in accordance with the principles and requirements of Managing Urban Stormwater – Soils and Construction, Volumes 1 (Landcom 2004) and 2C (DECC, 2008) (known as the Blue Book).	Contractor	Pre-construction, construction
B167	Reduction in surface water quality due to sedimentation	Erosion and sediment controls throughout the proposal site will be inspected and maintained to ensure they are operating effectively. <u>Management measures that have been integrated in the proposal design, including partial coffer damming of Billabong Creek are specified in the Surface Water Quality and Aquatic Ecology Assessment Report, Appendix K to the EIS (Jacobs 2023b).</u>	Contractor	Construction
B178	Vehicle strike	Appropriate speeds for all construction and contractor vehicles will be enforced to limit dust generation and minimise risk of fauna mortality through vehicle strike during construction and operation.	Contractor, WaterNSW	Construction , operation
B189	Light spill. Displacement of fauna from habitat adjoining the proposal footprint	<u>Works would be confined to daytime hours of 7:00am to 6:00pm, Monday to Sunday (including public holidays), with the exception of the limited activities as described above for noise impacts.</u> Light generated during construction will be managed in general accordance with the requirements in Australian Standard AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting. Directional lighting will be used to minimise the effects of light spill outside the CAZ as far as possible.	Contractor, WaterNSW	Construction , operation

ID	Impact	Environmental safeguards	Responsibility	Timing
B1920	Noise and vibration generation Displacement of fauna from habitat adjoining the proposal footprint	All activities on site are to be undertaken as per the approved CEMP and WaterNSW operational environmental procedures, with works confined between the following hours: daytime hours of 7am to 6pm, Monday to Sunday (including public holidays), with the exception of the following activities: - the delivery of materials as requested by the NSW Police Force or other authorities for safety reasons; emergency work to avoid the loss of life or damage to property, or to prevent environmental harm - emergency work to avoid the loss of life, property and/or material harm to the environment - works as approved through the out-of-hours works protocol as approved through the CEMP. Additional. These specific controls will be in accordance with the Interim Construction Noise Guideline (DECC, 2009) as listed included within the CEMP and should consider the proposal specific management measures outlined in the Noise and Vibration Impact Assessment (GHD 2023b).	Contractor, WaterNSW	Construction , operation
B201	Water quality, chemical and fuel impacts on flora and fauna	Specific measures will be incorporated into the CEMP and WaterNSW operational environmental procedures, to minimise the potential for chemical spills and associated impacts on natural environments adjacent to and downstream of the areas of impact. Spill kits will be made available to construction vehicles and operation/maintenance vehicles. A management protocol for accidental spills will be put in place. Chemicals will be stored in bunded areas. <u>Post approval Management/Monitoring plans will be prepared and implemented in accordance with relevant NSW EPA Guidance including, but not limited to:</u> <u>Consultants reporting on contaminated land, Contaminated Land Guidelines, NSW EPA 2020.</u> <u>Environmental Guidelines, Solid Waste Landfills (2nd Edition), NSW EPA 2016.</u>	Contractor, WaterNSW	Construction , operation

ID	Impact	Environmental safeguards	Responsibility	Timing
		• <u>The NSW Waste Classification Guidelines and relevant NSW reuse/waste orders and exemptions (E.g. the Excavated Natural Material Order / Exemption)</u> • <u>NSW DCCEEW incident management protocols.</u> <u>Measures will include:</u> • <u>Site specific controls to reduce the risk of the release of potentially harmful chemicals from spills or leaks entering waterways</u> • <u>Spill kits will be kept on site and in construction vehicles where required</u> • <u>Storage of hazardous materials such as oils, chemical and refuelling activities in bunded areas within the construction activity zones</u> • <u>Bunded receptacles for concrete waste including concrete slurries and washout water provided at the work sites to capture, contain and appropriately dispose of any concrete waste at a suitably licenced waste facility. These will be located as far from waterways as feasible.</u>		
<u>B22</u>	<u>Water quality, chemical and fuel impacts on flora and fauna</u>	<u>Site environmental management during operation, inclusive of spill response measures, will be in accordance with broader WaterNSW existing environmental management procedures and policies.</u>	<u>WaterNSW</u>	<u>Operation</u>

ID	Impact	Environmental safeguards	Responsibility	Timing
Aboriginal Heritage				
AH1	Protecting Aboriginal heritage and minimising impacts during construction	All ground-disturbing works to earth mound and/or potential archaeological deposit (PAD) sites, including Forest Creek Block Bank Earth Mound 1 (AHIMS # 54-3-0058), Hartwood Weir Scarred Tree and PAD (AHIMS # 54-3-0055), Hartwood EM Weir 1 (AHIMS # 54-3-0054) and Hartwood EM Weir 2 (AHIMS # 54-3-0056), must be avoided. Traditional Owners must also be involved in monitoring works to ensure the protection of these sites from the proposed works. Specific conditions include: 1. The identified Aboriginal sites <u>Aboriginal cultural heritage sites</u> that are in close proximity to the access tracks, including Forest Creek Block Bank Earth Mound 1 (AHIMS # 54-3-0058), Hartwood Weir Scarred Tree and PAD (AHIMS # 54-3-0055), Hartwood EM Weir 1 (AHIMS # 54-3-0054) and Hartwood EM Weir 2 (AHIMS # 54-3-0056), must be fenced off using temporary flagging to ensure that the sites are not disturbed. All vehicles must keep to the access tracks. 2. <u>All vehicles must keep to the access tracks</u> 3. An exclusion line using bollards is to be erected to the south of Hartwood EM Weir 1 (AHIMS # 54-3-0054) and Hartwood EM Weir 2 (AHIMS # 54-3-0056) to ensure that no vehicles drive in close proximity to sites.	NSW DCCEEW, Contractor	Design, pre-construction, construction
AH2	Protecting Aboriginal heritage and minimising impacts during construction	Identified scar trees, including <u>The following culturally modified (scar) trees</u> Hartwood Weir Scarred Tree and PAD (AHIMS # 54-3-0055), Wanganella Weir Scarred Tree 1 (AHIMS # 54-2-0263) and Forest Creek Block Bank Scarred Tree 3 (AHIMS # 54-3-0034) are to have no ground-disturbing works within the canopy dripline, damage to their trunks or limbs removed and/or damaged. Temporary flagging must be erected to ensure the preservation of these sites and Traditional Owners must be involved in monitoring works to ensure the protection of these sites from the proposed works.	Contractor	Pre-construction, construction

ID	Impact	Environmental safeguards	Responsibility	Timing
AH3	Protecting, avoiding and minimising impacts on Aboriginal heritage & Consultation	Heritage features must be managed under the preparation of an Aboriginal Cultural Heritage Management Plan (ACHMP) that, at a minimum, includes: 1. Minimisation and managing the impacts of the project on heritage items within the disturbance area. 2. Protecting the heritage items outside the project disturbance area. 3. Managing the discovery of human remains or previously unidentified heritage items <u>based on WaterNSW's unexpected finds protocol</u>. 4. Ensuring any workers on site receive suitable heritage inductions prior to carrying out any work on site. 5. Monitoring and reporting on the effectiveness of any mitigation measures and any heritage impacts of the project. 6. Maintaining and managing reasonable access for registered Aboriginal parties (RAPs) to heritage items on site. 7. Conducting further archaeological and heritage assessments in any disturbance areas where this assessment has not already been carried out. 8. Be developed in consultation with RAPs and Heritage NSW.	NSW DCCEEW Contractor	Design, pre-construction, construction, operation
AH4	Unexpected finds	This assessment covers the harm to all known cultural heritage sites. In the event that unexpected finds occur during the proposed construction activities, an unexpected finds process must be followed. This process will be developed as part of the recommended ACHMP prior to the proposed works' commencement. If, human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted, they will then notify the Coroner's Office. Following this, if the remains are believed to be of Aboriginal origin, then the Aboriginal stakeholders and Heritage NSW must be notified.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
AH5	Consultation	It is recommended that NSW DCCEEW will continue to inform the Aboriginal stakeholders about the management of Aboriginal cultural heritage within the study area throughout the completion of the project. The consultation outlined as part of this ACHA is valid for six months and must be maintained by the proponent for it to remain continuous. If a gap of more than six months occurs, then the consultation will not be suitable to support an ACHMP for the study areas.	NSW DCCEEW	Construction
AH6	Consultation	A copy of the ACHAR should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project.	NSW DCCEEW	Design, pre-construction
AH7	<u>Protecting, avoiding and minimising impacts on scar trees.</u>	<u>Hartwood Weir Scarred Tree 4 (AHIMS # 54-3- 0059), Hartwood Weir Hearth (AHIMS #54-3-0061, Forest Creek Block Bank Scarred Tree 2 (AHIMS # 54-3-0031), Wanganella Weir Scarred Tree 3 (AHIMS # 54-2-0264) and Forest Creek Block Bank Scarred Tree 4 (AHIMS # 54-3-0057) will be impacted by the proposed works and are to be managed in accordance with these recommendations:</u> <u>Conditions of approval must state that impacts to the following sites must be managed under preparation of an Aboriginal Cultural Heritage Management Plan (ACHMP)</u> <u>Hartwood Weir Scarred Tree 4 (AHIMS # 54-3- 0059), digital recording of the tree using LIDAR scanning and casting of the scar, followed by careful removal of the tree avoiding damage to the cultural modification of the tree</u> <u>Hartwood Weir Hearth (AHIMS #54-3-0061, including archaeological salvage of the site with RAPs present</u> <u>Forest Creek Block Bank Scarred Tree 2 (AHIMS # 54-3-0031), trimming to be conducted by a qualified arborist and under supervision of RAPs</u> <u>Wanganella Weir Scarred Tree 3 (AHIMS # 54-2-0264) trimming to be conducted by a qualified arborist and under supervision of RAPs</u>	<u>NSW DCCEEW, Contractor</u>	<u>Pre-construction, construction</u>

ID	Impact	Environmental safeguards	Responsibility	Timing
		Forest Creek Block Bank Scarred Tree 4 (AHIMS # 54-3-0057) digital recording of the tree using LIDAR scanning and casting of the scar, followed by careful removal of the tree avoiding damage to the cultural modification of the tree.		
Non Aboriginal heritage				
HH1	Impacts to registered and previously unidentified historical heritage items or archaeological sites	Management of historical heritage during pre-construction and construction - Prior to construction commencing, all personnel working on site will be provided a site-specific cultural heritage induction (e.g. Project induction toolbox talks and staff inductions). This will include the heritage sensitivities of work sites and the procedures for the management of non-Aboriginal cultural heritage during construction, such as the discovery of historical artefacts, features or deposits, or the discovery of human remains. - An unexpected finds protocol that specifies measures to avoid and minimise impacts on any previously unidentified historical archaeological sites and values discovered during pre-construction and construction will be prepared. If unexpected items are discovered during construction, all work will cease in the area. The Contractor will inform the site supervisor and Project Manager, and an Historical Archaeologist will be engaged to assess the item's significance. The Project Manager must advise a WaterNSW heritage officer of any unexpected finds on WaterNSW land or in relation to a WaterNSW asset, as per Section 146 of the Heritage Act.	NSW DCCEEW, Contractor	Pre-construction, Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
HH2	Impacts to Hartwood Weir (WaterNSW S170 4550110)	Management of Hartwood Weir (WaterNSW S170 4550110) during pre-construction • NSW DCCEEW will record the asset prior to demolition in accordance with Heritage NSW's How to Prepare Archives Records of Heritage Items, Guidelines for Photographic Recording of Heritage Sites, Buildings and Structures, and the updates to technology and practice which have occurred since the 2006 guidelines were issued. The archival recording should result in three sets of a digital photographic report, along with digital materials. DCCEEW will provide WaterNSW with a draft copy for review, prior to lodging this recording with the Heritage NSW library, State Library of NSW and the local council library (<i>Guideline 3.57</i>). NSW DCCEEW and WaterNSW will also retain a copy of the final report for their own records. • Explore options in conjunction with WaterNSW for the installation of interpretation of Hartwood Weir to provide information about the heritage significance of the site, fabric, value and history of the site, supported by digital content, including consideration of expenditure and ongoing maintenance. The interpretation display should include the engraving (from the right bank abutment), which is proposed to be removed as part of demolition. For example, interpretation options may include (but are not limited to): – signage – embedded interpretation – artworks – interpretive display. • Places for interpretive display/s may include location/s determined by WaterNSW and/or NSW DCCEEW. Recommendations from the Edward River Council and/or other local stakeholders may be taken into consideration in the determination of the preferred location/s.	WaterNSW, NSW DCCEEW, Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		Provision of 14 days prior written notification of the proposed demolition of the heritage item will be made to the Heritage Council of NSW by NSW DCCEEW and WaterNSW.		
HH3	Impacts to Wanganella Weir	Management of Wanganella Weir during pre-construction - The asset will be recorded prior to demolition in accordance with Heritage NSW's preferred method of archival recording, as described in HH2. A draft version of the report should be provided to WaterNSW for review. NSW DCCEEW will provide WaterNSW with a draft copy for review, prior to lodging this recording with the Heritage NSW library, State Library of NSW and the local council library. NSW DCCEEW and WaterNSW will also retain a copy of the final report for their own records. - Explore options in conjunction with WaterNSW for the installation of interpretation (for example but not limited to signage, embedded interpretation, artworks, interpretive display) at the portion of Wanganella Weir which is being retained (near the southern wingwall and timber formwork) to provide information about the heritage significance of the site, fabric, value and history of the site, supported by digital content, including consideration of expenditure and ongoing maintenance. - Prior to its demolition, measures to manage indirect historical heritage impacts to the remaining elements of the weir (the southern wingwall and timber formwork) will be implemented, including physical barrier protection and/or exclusion zones, until the works in the vicinity of the remaining weir features have been completed.	NSW DCCEEW, Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
Land use, property and agriculture				
LU1	Biosecurity (Weeds and pathogen management)	As part of the CEMP document weed and pathogen management should be documented. Measures must be auditable and linked to management outcomes such as: • identify listed weeds (identified in NSW WeedWise) in the construction area and assess the risk of additional spread prior to relocating topsoil. Implement measures to manage this risk during clear and grade, and reinstatement • to a reasonable extent practicable during the clear and grade phase, check that vehicles and plant equipment are free of soil (dust/clods) and vegetation prior to entry and exit from the construction area • evaluate disturbed areas post-construction and implement rehabilitation in accordance with the appropriate safeguards. • To avoid and minimise spread of weeds and pathogens, all vehicles and plant undertaking construction works must be cleaned and free of debris prior to entrance to the site. Plant used within waterways must be cleaned before exiting the site if working between multiple waterways.	Contractor	Pre-construction, construction and operation
LU2	Land use and property impacts, including severance and other impacts on operations	The design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing to identify opportunities to minimise impacts on farming operations where practicable. Property owners and occupants would be consulted in accordance with the communication management plan for the proposal, to ensure that owners/occupants are informed about: • the timing and scope of activities in their area • any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements	Contractor	Pre-construction and construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		activities that have the potential to impact on livestock. Feasible and reasonable property-specific measures would be identified in consultation with landholders, and implemented during construction, where construction is located on or immediately adjacent to private properties and has the potential to affect farm operational arrangements.		
LU3	Native Title	Consultation with the claimants of Native Title Claim VC2021/001 would be undertaken to confirm any further plans to get the claim registered. In the event further attempts to register the claim are proposed consultation with the claimant would occur with regards to the proposed works within the claim area.	Contractor	Pre-construction
LU4	Property acquisition and easements	All property acquisition and easements will be carried out in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> and in consultation with WaterNSW.	DCCEEW	Pre-construction
LU5	Traffic and access	Landowners will be consulted about access arrangements.	Contractor	Pre-construction / construction
LU6	Reinstatement	Disturbed areas will be revegetated with endemic riparian and floodplain species (replacing like for like) to be undertaken as soon as practical, progressively. Rehabilitation at construction sites to include replacing topsoil. Mature trees removed from the construction footprint will be cut into appropriate sections and relocated adjacent to waterways. Existing woody debris will also be relocated. Any reinstatement plans in proximity to the proposal will be reviewed and approved by WaterNSW beforehand.	Contractor	Construction
LU7	Wanganella Landfill	Access to the Wanganella Landfill is to be maintained at all times. Any loss of public access is to be notified to the community in advance with an alternate access to be provide where possible.	Contractor	Construction
LU8	Wanganella Landfill	Wanganella Landfill is not to be used for the disposal of waste without the prior approval from Edward River Council. It should also only be used for the disposal of materials agreed upon with Council.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
LU9	Travelling Stock Reserves	Access along the Travelling Stock Reserves is to be maintained at all times. Where access cannot be maintained, consultation with Local Land Services would be undertaken to confirm any requirements during any full closures of the reserve.	Contractor	Construction
LU10	Travelling Stock Reserves	Consultation with Local Land Services would be undertaken to confirm any specific requirements for works within a travelling stock reserve in relation to their use and any fencing or similar required during construction.	Contractor	Construction
Traffic and access				
TA1	Impacts to traffic and transport networks	Develop a construction traffic management sub-plan, prior to construction. The plan shall detail: - the potential impacts/delays associated with the development. - the works required to the existing road infrastructure. - the measures to be implemented to maintain the standard and safety of the network. - the procedures to monitor and ensure compliance. The plan will include, at a minimum, the following management measures: - preparation of a Traffic Guidance Scheme, detailing adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised - maintain accessibility for pedestrians and cyclists - indicate routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses - implement measures to manage traffic flows around the area affected by the construction of the proposal, including, as required, regulatory and direction signposting, line marking, and variable message signs and all other traffic control devices necessary for the implementation of the construction traffic management sub-plan	Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		undertake consultation with the relevant road authorities during preparation of the sub-plan. Ensure the performance of proposal traffic arrangements is monitored during construction.		
TA2	Safety implications arising from the general increase in traffic volumes	Protection shall be provided through advanced warning of roadworks, speed changes, safety barriers with adequate offsets and deflection allowance, where necessary. The construction TMP shall cover strategies to manage vehicular flow to facilitate the safe movement of road users (i.e. workers and staff, and the general public – pedestrians, cyclists, and other non-proposal vehicles) within, around, and to/from the proposal footprint.	Contractor	Construction and operation
TA3	Increase in heavy vehicles	All deliveries shall be scheduled and coordinated to facilitate the organised arrival of trucks. Ample space and time shall be allotted for the safe loading and unloading of materials. All parking and queueing (if any) shall be contained within the proposal footprint.	Contractor	Construction and operation
TA4	Damage on roads along haulage and access routes resulting from the movement of proposal vehicles	The conditions of the access roads to the proposal's footprint, and of the roads linking the proposal sites to the existing freight network used for freight transport shall be assessed by a Road Dilapidation Report prior to construction commencing and following completion of construction. Any defects attributable to construction activities shall be rectified or compensated in consultation with the relevant road authorities.	NSW DCCEEW / Contractor	Construction
TA5	Environmental impacts associated with the movement of vehicles	Monitor the roads leading to and from the proposal footprint and take necessary steps to rectify any road deposits caused by site vehicles as soon as reasonably practicable, to maintain the safety of road users. Where possible, offset the construction vehicle activity from peak periods of road network activity.	Contractor	Construction
TA6	Environmental impacts associated with the movement of vehicles	Induct employees and contractors to raise awareness and understanding of traffic and transport mitigation measures to be implemented during construction via the CEMP.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
TA7	Impacts to road infrastructure	Undertake the necessary upgrades and construction of vehicular access tracks to provide safe and efficient movement of light and heavy vehicles to the proposal sites.	Contractor	Pre-construction
Noise and vibration				
NV1	Construction hours and scheduling	Where feasible and reasonable, construction would be carried out during the ICNG standard daytime working hours. Work generating high noise and/or vibration levels would be scheduled during less sensitive time periods.	NSW DCCEEW / Contractor	Construction
NV2	Construction noise	The use of quieter and less vibration emitting construction methods would be considered and implemented, where feasible and reasonable.	NSW DCCEEW / Contractor	Pre-Construction , Construction
NV3	Construction noise	As much distance as possible would be placed between the plant or equipment and residences and other sensitive land uses, where possible.	NSW DCCEEW / Contractor	Pre-Construction , Construction
NV4	Construction noise	Reduce throttle setting and turn off equipment when not being used.	Contractor	Construction
NV5	Construction noise	Selection of equipment which is of an appropriate size and power for the task would be undertaken where possible.	NSW DCCEEW / Contractor	Pre-Construction , Construction
NV6	Impacts from deliveries	Loading and unloading of materials/deliveries would occur as far as possible from sensitive receivers.	NSW DCCEEW / Contractor	Construction
NV7	Impacts from deliveries	Delivery vehicles would be fitted with straps rather than chains for unloading, wherever possible.	NSW DCCEEW / Contractor	Construction
NV8	Impacts from deliveries	Out of hours movements would be avoided or minimised where possible.	NSW DCCEEW / Contractor	Construction
NV9	Vibration impacts	Where required, limit the size of the vibratory compactor to maintain the safe work buffer distances.	NSW DCCEEW / Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
NV10	Notification to affected residences	Where site establishment works at site access tracks (vegetation clearing or upgrade of tracks) would occur within 700 metres of residences, the affected residences would be notified a minimum of 7 days prior to work including: - a description of the works to be undertaken including its timing and duration - the expected noise levels during the works - a contact number for further information or for complaints.	NSW DCCEEW / Contractor	Pre-construction
NV11	Construction traffic noise	Reduce the speed of vehicles when approaching sensitive receivers.	Contractor	Construction
NV12	Construction traffic noise	With the exception of delivery of oversized plant or structures, schedule deliveries to nominated hours only.	Contractor	Construction
NV13	Construction traffic noise	Optimise the number of vehicle trips to and from site – movements can be organised to amalgamate loads rather than using a number of vehicles with smaller loads.	Contractor	Construction
NV14	Construction traffic noise	Limit access routes to the site to the designated routes.	Contractor	Construction
NV15	Construction traffic noise	Manage driver behaviour and avoidance of the use of engine compression brakes.	Contractor	Construction
NV16	Operational noise	Mechanical plant should be designed to meet the Noise Policy for Industry project noise trigger levels.	NSW DCCEEW / Contractor	Detailed design
NV17	Operational noise	Mechanical plant should be well maintained and operate in an efficient manner. This is to limit any excess noise generation that may arise when plant is not functioning correctly.	NSW DCCEEW / Contractor	Detailed design
Visual amenity				
V1	Changes to view from vegetation loss	Disturbed areas will be revegetated with endemic riparian and floodplain species (replacing like for like) to be undertaken as soon as practical, progressively. Mature trees removed from the construction footprint will be cut into appropriate sections and relocated adjacent to waterways. Existing woody debris will also be relocated.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
V2	Impacts to views from construction	Work areas will be kept tidy at all times. All temporary above-ground infrastructure will be removed at the completion of construction. Reinstatement of construction activity zones will commence progressively post construction and will be undertaken as soon as practicable.	Contractor	Construction
V3	Impacts from construction lighting	Lighting of work areas, compounds, and work sites will be oriented to minimise glare and light spill impact on nearby receivers.	Contractor	Construction
V4	Changes to views in Wanganella Camping Reserve	The following actions will be adhered to during work within Wanganella Camping Reserve: - Picnic tables and facilities within the construction footprint will be relocated to another area in Wanganella Camping Reserve. - Construction site hoarding and fencing will be designed, erected, and maintained to minimise visual impacts. This will include: - erecting hoarding/fencing as early as possible in the site - using high quality materials suitable for parks and public spaces. - The hoarding of construction materials will be minimised as far as practicable.	Contractor	Construction
V5	Rehabilitation of the site	A rehabilitation plan for the sites will be developed in consultation with WaterNSW and Edward River Council. This will include a planting schedule of endemic riparian and floodplain species (replacing like for like) appropriate to the sites and requiring low maintenance. The disturbed riverbanks will be reinstated with materials that provide stability while also presenting as natural an appearance as possible. Any rehabilitation plans in proximity to the proposal will be reviewed and approved by WaterNSW.	NSW DCCEEW Contractor	Pre-construction, construction and operation

ID	Impact	Environmental safeguards	Responsibility	Timing
Public health and safety				
HR1	Managing the potential for hazards during construction	The CEMP will detail processes, responsibilities, and measures to manage hazards, and incident and emergency situations during construction.	Contractor	Pre-construction, construction
HR2	Managing the potential for hazards during construction	The soil and water management plan will include a spill response procedure. The procedure will detail measures to manage hazardous substances and dangerous goods, including storage, handling, and spill response, in accordance with legislative requirements.	Contractor	Pre-construction, construction
HR3	Signage to warn of safety risks from traffic	Where required, signs will be installed during construction of the proposal to communicate risks from traffic to the community.	Contractor	Pre-construction, construction
HR4	Managing risks to users of Billabong Creek	A creek exclusion zone will be demarcated using buoys during construction and operation of the proposal. During construction, the creek exclusion zone will be of a sufficient size to remove the risk of vessels or swimmers colliding with construction equipment and to reduce the risk of injury from underwater noise during piling. During operation, the creek exclusion sign will be of a sufficient size to manage the safety risk to swimmers from the regulators. Signs will be installed during operation of the proposal to communicate that swimming near or jumping of the new regulators is prohibited.	Contractor	Construction, operation

ID	Impact	Environmental safeguards	Responsibility	Timing
HR5	Bushfire risk	A bush fire emergency management plan will be prepared in accordance with Planning for Bush Fire Protection (NSW Rural Fire Service, 2019) and in consultation with the NSW Rural Fire Service. The bush fire emergency management plan will include responsibilities associated with and details of: • site specific hazards and risks for the proposal area • hot works procedures • procedures to maintain bush fire awareness • bush fire mitigation measures • fire preparedness actions including evacuation triggers, evacuation routes, mustering points, neighbourhood safe places • instructions for sheltering in-vehicle if there are no other options. Construction staff attendance on site will be suspended on days with severe or greater forecast fire danger ratings, and construction/maintenance hours will be reduced or moved to an earlier time on hot days (days above 40 degrees) to avoid work being undertaken during the hottest time of the day.	Contractor	Construction
HR6	Bushfire risk	WaterNSW will implement procedures relating to bushfire hazards for maintenance activities.	WaterNSW	Operation
Social				
S1	Impacts and benefits for local and regional communities	NSW DCCEEW will continue to manage and deliver the Communication and Engagement Plan (C&EP) in the lead up to and during construction of the proposal. This will help to ensure that: • the community and stakeholders have a high level of awareness of all processes and activities • accurate and accessible information is made available • a timely response is given to issues and concerns raised by the community • feedback from the community is encouraged opportunities for input are provided.	NSW DCCEEW	Pre-construction, construction

ID	Impact	Environmental safeguards	Responsibility	Timing
S2	Amenity and access impacts for local communities and landholders	A communication management plan will be developed by the primary contractor in accordance with the C&EP and implemented to define the specific requirements for engagement during delivery of the proposal. A communication management plan will be developed to ensure that: - landowners/landholders, community members and businesses affected by construction activities (eg property impacts, cultural heritage impacts, access changes, noise, vibration, dust) are notified in a timely manner about impacts - accurate and accessible information is made available through multiple channels (eg printed fact sheets and notification letters, email, phone calls, online) - feedback from the community is encouraged - opportunities for input are provided where appropriate. The communication management plan will define the requirements for the complaints management system to be implemented throughout the duration of the proposal, including 24-hour, seven days a week phone line, postal and email address for written enquiries, and publication of contact details.	NSW DCCEEW, Contractor	Pre-construction, construction
S3	Impacts to and benefits for Aboriginal communities	NSW DCCEEW will continue to engage with local Aboriginal stakeholders about the proposal. NSW DCCEEW will continue to manage and deliver tailored and targeted engagement with Traditional Owners and Aboriginal communities and stakeholders in accordance with the C&EP. This will: - provide mechanisms for Aboriginal people and communities to provide input to the proposal - draw upon perspectives, knowledge, relationships, cultural practices, and wisdoms of Aboriginal stakeholders to minimise potential disruptions from the proposal - demonstrate how input provided is incorporated into decision making and planning for the proposal	NSW DCCEEW	Pre-construction, construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		- identify employment, training, and procurement opportunities associated with the proposal - protect and mitigate harm of Aboriginal cultural heritage and spiritual values within the influence of the proposal scope.		
S4	Local and First Nation employment and business opportunities	NSW DCCEEW will maximise the participation of local, regional and First Nation businesses in the proposal, such as: - preferential local and First Nation participation inclusions in tender documents which outline the sub-contracting and local employment goals that construction contractors would need to deliver - promotion of supply and employment opportunities through local industry channels, employment organisations and local Aboriginal organisations.	NSW DCCEEW	Pre-construction, construction
S5	Non-resident workforce accommodation requirements	The construction contractor will share information with local accommodation providers about any non-resident workforce accommodation requirements in a timely manner.	Contractor	Pre-construction, construction

ID	Impact	Environmental safeguards	Responsibility	Timing
Soils and contamination				
CS1	Wanganella flood bypass channel area – Development of a leachate and ground gas management plan as part of construction management documents	• Development of a leachate and ground gas management plan and assessment of potential for runoff from the Landfill into receiving water bodies as part of construction management documents (e.g. CEMP). Consideration should be given to targeted site investigations to inform the development of the leachate and ground gas management plan. • Implementation of a monitoring during construction works in this area to address human health risks from potential gas/vapour migration. • Implementation of a groundwater monitoring program to assess the potential for leachate migration into excavations and during operation. • Management/Monitoring plans should be prepared in accordance with relevant NSW EPA Guidance including, but not limited to: – consultants reporting on contaminated land, Contaminated Land Guidelines, NSW EPA 2020 – Environmental Guidelines, Solid Waste Landfills (2nd Edition), NSW EPA 2016.	Contractor	Pre-construction
CS2	Construction environmental management plan (CEMP)	• Odour and dust/fibre control procedures and monitoring to minimise the release of dust/fibres to the surrounding environment. • Erosion and sediment control procedures and management measures. • Procedures to minimise the potential for construction spills and contamination releases. • Protocols to minimise the potential for offsite migration of impact in surface water and groundwater. • Emergency response procedures in the event of a release of contamination, whether it be via surface water, groundwater, or air. • A soil management plan detailing the high-risk areas of the site, exposure risk management protocols, materials storage procedures (including stockpile management and reuse protocols), waste transport procedures, waste tracking and	Contractor	Pre-construction, construction

ID	Impact	Environmental safeguards	Responsibility	Timing
		disposal plans to ensure all material is appropriately managed. • An unexpected finds protocol, particularly with regard to asbestos, which is linked to additional site investigations and the development of a remedial action plan, where required, to effectively manage contamination. • Management/Monitoring plans should be prepared in accordance with relevant NSW EPA Guidance including, but not limited to: • Consultants reporting on contaminated land, Contaminated Land Guidelines, NSW EPA 2020. • Environmental Guidelines, Solid Waste Landfills (2nd Edition), NSW EPA 2016. • The NSW Waste Classification Guidelines and relevant NSW reuse/waste orders and exemptions (E.g. the Excavated Natural Material Order / Exemption).		
CS3	Environmental monitoring program	• Surface water, groundwater and dust monitoring should be implemented to monitor for and respond to the emergence of contamination impacts during construction of the proposal. • Monitoring plans should be prepared in accordance with relevant NSW EPA Guidance including, but not limited to: – consultants reporting on contaminated land, Contaminated Land Guidelines, NSW EPA 2020.	NSW DCCEEW / Contractor	Pre-construction, construction and operational
CS4	Operational management	An operational management plan will include controls to minimise contamination from plant and equipment usage during maintenance activities.	WaterNSW	Operation

ID	Impact	Environmental safeguards	Responsibility	Timing
Air quality				
AQ1	Air quality	Dust during construction will be considered and addressed within the CEMP and will include methods to manage work during strong winds or other adverse weather conditions as required. As a minimum, the following measures will be included: • covering all loaded trucks and vessels • machinery to be turned off rather than left to idle when not in use • maintenance of all vehicles, including trucks and vessels entering and leaving the site in accordance with the manufacturers specifications to comply with all relevant legislation • maintenance of all plant and equipment to ensure good operating conditions and exhaust emissions comply with the <i>Protection of the Environment Operations Act 1997</i> • stockpiled materials will be covered, stabilised, or stored in areas not subject to high wind • maintaining the work site in a condition that minimises fugitive emissions of dust.	Contractor	Pre-construction, construction
AQ2	Impacts on sensitive receivers	Local residents will be advised of hours of operation and duration of work and supplied with a contact name and number for queries regarding air quality.	Contractor	Pre-construction

ID	Impact	Environmental safeguards	Responsibility	Timing
Waste and resource management				
WR1	Waste management	Resource and waste management controls will be prepared and included in the CEMP. These will include the following (as a minimum): - the type, classification, and volume of all materials to be generated and used on-site including identification of recyclable and non-recyclable waste in accordance with <i>NSW EPA Waste Classification Guidelines</i> (2014) - quantity and classification of excavated material generated as a result of the proposal - interface strategies for excavated spoil on-site to ensure reuse where possible - strategies to 'avoid', 'reduce', 'reuse' and 'recycle' materials - classification and disposal strategies for each type of material - destinations for each resource/waste type either for on-site reuse or recycling, offsite reuse or recycling, or disposal at a licensed waste facility - details of how material will be stored and treated on-site - identification of available recycling facilities on and off-site - identification of suitable methods and routes to transport waste - procedures and disposal arrangements for unsuitable excavated material or contaminated material - the types of waste collected, amounts, date/time and details of disposal are to be recorded in a waste register - site clean-up for each construction stage.	Contractor	Pre-construction
WR2	Waste management	Waste receptacles will be provided, and recycling of materials encouraged. Rubbish will be transported to an appropriate waste disposal facility.	Contractor	Construction
WR3	Waste management	All wastes will be managed in accordance with the POEO Act.	Contractor	Construction
WR4	Waste management	Portable toilets will be provided for construction workers and will be managed by the service provider to ensure the appropriate disposal of sewage.	Contractor	Construction

ID	Impact	Environmental safeguards	Responsibility	Timing
WR5	Waste management	Weeds removed during work will be managed in accordance with the <i>Biosecurity Act 2015</i> requirements that relate to their classification status.	Contractor	Construction
WR6	Waste management	Site inductions will occur and be recorded by a Site Supervisor to ensure staff are aware of waste disposal protocols.	Contractor	Construction
WR7	Demand on resources	Procurement will endeavour to use materials and products with a recycled content where that material or product is cost and performance effective.	NSW DCCEEW Contractor	Pre-construction