

7 Environmental management

This chapter describes how the proposal will be managed to reduce potential environmental impacts throughout detailed design, construction and operation. A framework for managing the potential impacts is provided with reference to environmental management plans and relevant Roads and Maritime QA specifications. A summary of site-specific environmental safeguards is provided as detailed in Chapter 6 and the licence and/or approval requirements required before construction are also listed.

7.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) would be prepared to describe safeguards and management measures identified. These plans would provide a framework for establishing how these measures would be implemented and who would be responsible for their implementation.

The plans would be prepared before the construction of the proposal and must be reviewed by the Roads and Maritime Senior Environmental Officer, South West Region before the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in the Roads and Maritime QA *Specification G36 – Environmental Protection (Management System)*, Roads and Maritime QA *Specification G38 – Soil and Water Management (Soil and Water Plan)* and Roads and Maritime QA *Specification G40 – Clearing and Grubbing*.

7.2 Summary of safeguards and management measures

Environmental safeguards outlined in this document would be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards would minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised in Table 7.1.

Table 7.1: Summary of site specific environmental safeguards

No.	Impact	Environmental safeguards	Responsibility	Timing
1	General	<ul style="list-style-type: none"> All environmental safeguards must be incorporated within the following documents: <ul style="list-style-type: none"> - Construction Environmental Management Plan. - Detailed design stage. - Contract specifications for the proposal. 	Project manager	Pre-construction
2	General	<ul style="list-style-type: none"> A risk assessment must be carried out on the proposal in accordance with the Roads and Maritime Audit Pack and OSD risk assessment procedures to determine an audit and inspection program for the works. The recommendations of the risk assessment are to be implemented. A review of the risk assessment must be undertaken after the initial audit or inspection to evaluate if the level of risk chosen for the project is appropriate. Any works resulting from the proposal and as covered by the REF may be subject to environmental audit(s) and/or inspection(s) at any time during their duration. 	Project manager and regional environmental staff	Pre-construction After first audit
3	General	<ul style="list-style-type: none"> The environmental contract specification must be forwarded to the Roads and Maritime Senior Environmental Officer for review at least 10 working days before the tender stage. A contractual hold point must be maintained until the CEMP is reviewed by the Roads and Maritime Senior Environmental Officer. 	Project manager	Pre-construction
4	General	<ul style="list-style-type: none"> The Roads and Maritime Project Manager must notify the Roads and Maritime Environmental Officer South West Region at least five days before work commencing. 	Project manager	Pre-construction
5	General	<ul style="list-style-type: none"> All businesses and residences likely to be affected by the proposed works must be notified at least five working days before the commencement of the proposed activities. 	Project manager	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
6	General	<ul style="list-style-type: none"> Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors. 	Contractor	Pre-construction and during construction as required.
7	Biodiversity – loss of native vegetation habitat	<ul style="list-style-type: none"> A detailed biodiversity management plan will be prepared as part of the Construction Environmental Management Plan (CEMP) to minimise the ecological impacts of the proposal. The biodiversity management plan will include the limits of clearing and exclusion zones. An exclusion zone plan will be implemented in line with RTA (2011c) - <i>Biodiversity Guidelines Guide 2: Exclusion zones</i>. Exclusion zones will include any parts of the proposal that form a boundary with an E2 zone. Exclusion zones will be established to prevent unnecessary clearing or disturbance to the E2 zone (including groundcover vegetation). 	Project manager	Pre-construction
8	Biodiversity – weed spread and establishment	<ul style="list-style-type: none"> A weed management plan will be prepared before works commence, for implementation before, during and after the works. 	Project manager and contractor	Pre-construction
9	Biodiversity – loss of mature trees, including hollow-bearing trees	<ul style="list-style-type: none"> Removal of mature trees, including hollow-bearing trees, will be minimised wherever possible while still meeting operational objectives for road safety, design and sediment basin operation. Hollow-bearing trees to be retained will be protected by a physical barrier or fence Pruning or lopping of limbs will be conducted in preference to tree removal wherever possible. Hollow-bearing trees to be retained will be defined by survey before clearing. The translocation and reuse of hollow bearing trees as glider poles 	Project manager and contractor	Pre-construction and construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>will be investigated before the completion of detailed design.</p> <ul style="list-style-type: none"> Nest boxes will be installed at a minimum 1:1 ratio for the loss of hollows greater than five centimetres in diameter, as detailed in RTA (2011c) - <i>Biodiversity Guidelines Guide 8: nest boxes</i>. Seventy per cent of nest boxes will be installed before construction and 30 per cent will be installed during construction. Microbat nest boxes would be constructed of UV resistant recycled plastic to increase longevity and decrease maintenance requirements. These will comprise 10 per cent of all nest boxes installed. A bat ecologist will provide supply details for these nest boxes. Placement of nest boxes will aim to reach the benchmark for trees with hollows for Western Slopes Grassy Woodland in the Murrumbidgee catchment (five per 1000 square metres) (DECC 2008c). 		
10	Biodiversity – loss of vegetation communities	<ul style="list-style-type: none"> The limits of the proposal will be defined by survey before clearing and grubbing. Removal of remnant native vegetation in Silvalite Reserve, the Planning Agreement Areas and roadside reserves will be minimised wherever possible and will include use of exclusion fencing where appropriate. All staff will be inducted and informed of the limits of vegetation clearing and the areas of vegetation to be retained. All vehicles and equipment used for construction will adhere to the access tracks, existing roads and exclusion areas outlined in the traffic management plan. Locally native species will be used for revegetation. Species will be consistent with those for the Commonwealth scientific committee determination of Box-Gum Woodland. Revegetation will target areas surrounding isolated hollow-bearing trees to facilitate movement of Squirrel Gliders in the study area. Planting densities and tree and shrub species will be typical of Box- 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		Gum Woodland.		
11	Biodiversity – weed spread and establishment	<ul style="list-style-type: none"> • Weed control will be implemented, as detailed in RTA (2011c) - <i>Biodiversity Guidelines Guide 6: Weed management</i>. • Management practices outlined in the national recovery plan for Box-Gum Woodland (DECCW 2010a – Table 4) will be implemented to minimise the spread of weeds and the potential impacts of weed invasion on this ecological community. This includes machinery hygiene protocols to prevent weed spread, no stockpiling in remnant areas and implementation of a weed control program. • All new vehicles to site will be cleaned to reduce the incidence of weed spread and establishment. • The spread of introduced plant species within the limits of the proposal would be monitored by the contractor and Roads and Maritime during construction. • Weed control will be undertaken if introduced plant species become prevalent in the limits of the proposal. • Declared noxious weeds would be managed according to the requirements of the <i>Noxious Weeds Act 1993</i>. • Weed infested topsoil will be disposed of or treated and would not be stockpiled adjacent to any areas of native vegetation. 	Project manager and contractor	Construction
12	Biodiversity – chemical and fuel impacts on native vegetation	<ul style="list-style-type: none"> • Any herbicides used for weed control will be applied to the manufacturer's specifications and as outlined in the manufacturers Material Safety Data Sheet. • Broad spectrum non-selective herbicides (residual herbicides) will not be used. Herbicides selected for use will be appropriate for the species being treated. • Spraying of herbicides will not be undertaken in windy weather or within such distance of a watercourse as would permit any of the herbicide to enter the water. 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> Mitigation measures for preventing and managing spills of fuels and chemicals will be implemented, such as refuelling and keeping fuels in bunded areas only. 		
13	Biodiversity – pathogen spread and establishment	<ul style="list-style-type: none"> Measures for preventing the introduction and/or spread of disease causing agents such as bacteria and fungi will be implemented, as detailed in RTA (2011c) – <i>Biodiversity Guidelines Guide 7: Pathogen management</i>. 	Project manager and contractor	Construction
14	Biodiversity – bushfire	<ul style="list-style-type: none"> In consultation with Wagga Wagga City Council, some of the large woody debris generated by the proposal will be relocated outside the limits of the proposal and retained as habitat on the ground. The woody debris retained will be spread in a fashion that replicates the natural occurrence of woody debris in the environment and will not be stacked. Placement of woody debris on the ground will not exceed the upper benchmark for total length of fallen logs for Western Slopes Grassy Woodland in the Murrumbidgee catchment (50 metres per 1000 square metres) (DECC 2008c). Woody debris will be re-used as detailed in RTA (2011c) - <i>Biodiversity Guidelines Guide 5: Re-use of woody debris and bushrock</i>. Relocation of woody debris will be done in a manner that discourages removal for firewood (eg inside fences rather than outside fences). 	Project manager and contractor	Construction
15	Biodiversity – impacts to fauna	<ul style="list-style-type: none"> Where practicable, vegetation removal will occur outside the main fauna breeding season (August to January) to avoid potential breeding disturbance to fauna, particularly the Squirrel Glider and woodland birds. The pre-clearing process detailed in RTA (2011c) - <i>Biodiversity Guidelines Guide 1: Pre-clearing process</i> will be implemented before commencement of the works. Clearing of vegetation will be undertaken as detailed in RTA (2011c) - <i>Biodiversity Guidelines Guide 4: Clearing of vegetation and removal</i> 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p><i>of bushrock.</i></p> <ul style="list-style-type: none"> Fauna handling during vegetation removal will be undertaken by a licensed fauna ecologist or wildlife carer, as detailed in RTA (2011c) - <i>Biodiversity Guidelines Guide 9: Fauna handling.</i> Barbed wire fences will not be installed in wildlife crossing zones due to the known incidence of Squirrel Gliders getting entangled and killed on these fences. 		
16	Biodiversity – impacts to threatened species	<ul style="list-style-type: none"> If unexpected threatened fauna or flora species are discovered, works will stop immediately and the Roads and Maritime <i>Unexpected Threatened Species Find Procedure</i> in RTA (2011c) – <i>Biodiversity Guidelines Guide 1: Pre-clearing process</i> will be followed. 	Project manager and contractor	Construction
17	Biodiversity – loss of habitat connectivity	<ul style="list-style-type: none"> Tall trees on the edge of the proposal site should be retained where safety requirements permit, to maintain natural connectivity for Squirrel Gliders (eg at Silvalite Reserve and on the northern approaches to the bridge). The existing road adjacent to Silvalite Reserve will be ripped and restored to minimise fragmentation of fauna habitat. These works will commence as soon as the road is no longer required for traffic access. Shrubs will be planted under the bridge and on batter slopes to assist in revegetation and to aid fauna passage and woodland bird movement. Rope bridges will be constructed at two locations – north of the proposed bridge from Silvalite Reserve to freehold land to the west; and within the Planning Agreement Areas south of the proposed bridge, at the transition between the large cut and fill areas (see following map). Trees and shrubs will be planted at the southern glider crossing location (see following map) (in consultation with Wagga Wagga City Council) between the sections of cut and fill to facilitate future 	Project manager	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>movement of Squirrel Gliders and other fauna from east to west and north to south.</p> <ul style="list-style-type: none"> Trees and shrubs will be planted on the western side of the realigned Camp Access Road location (see following map) to assist future north-south movement of Squirrel Gliders and other fauna. The planting will comply with road safety requirements. Roads and Maritime will investigate the potential for planting trees and shrubs in the land zoned E2 on the agricultural research station north-west of the proposal (see following map), to assist future movement of Squirrel Gliders and other fauna across the landscape. 		
18	Biodiversity – deterrence of fauna by road lighting	<ul style="list-style-type: none"> Road lighting that directs light down to the road and minimises light pollution of the night sky will be used to minimise disorientation of nocturnal species moving through the area. This will include use of LED lights and/or low pressure lights with longer wave lengths (orange or red colour spectrum) to minimise impacts to microbats. 	Project manager	Construction
19	Biodiversity – weed spread and establishment	<ul style="list-style-type: none"> Weed control will be undertaken during operation if declared noxious weed species become prevalent in the limits of the proposal. 	Project manager	Operation
20	Noise and vibration - construction and operation	<ul style="list-style-type: none"> Where practicable, architectural treatments to mitigate noise impacts to the identified sensitive receivers residence 1 and residence 3 will be completed before construction. 	Project manager	Pre-construction
21	Noise and vibration - construction	<ul style="list-style-type: none"> A noise barrier to minimise noise impacts on residence 3 during construction will be implemented where feasible. A construction noise and vibration management plan will be prepared. 	Project manager and contractor	Pre-construction
22	Noise impacts during construction -	<ul style="list-style-type: none"> Noise impacts will be minimised in accordance with Roads and Maritime's <i>Environmental Noise Management Manual</i> (RTA 2001) and Roads and Maritime's <i>Environmental Fact Sheet No. 2 - Noise</i> 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	general	<i>management and Night Works.</i>		
23	Noise and vibration – out of hours construction work	<ul style="list-style-type: none"> Works will generally be carried out during standard working hours (ie 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays will be undertaken in accordance with Practice Note 7 of Roads and Maritime’s Environmental Noise Management Manual. 	Project manager and contractor	Construction
24	Noise and vibration - construction	<ul style="list-style-type: none"> Maintenance work on all construction plant will be carried out away from noise sensitive receivers and confined to standard construction hours and work compound where feasible. The use of noisy plant or equipment (eg rockbreakers and jackhammers) will be limited to the daytime. Regular compliance checks will be carried out on noise emissions from plant and machinery. All plant and machinery will be regularly maintained to minimise noise emissions. Noise monitoring will be carried out during construction at three-monthly intervals. 	Project manager and contractor	Construction
25	Noise and vibration – construction (reversing alarms)	<ul style="list-style-type: none"> Reversing movements in work vehicles and plant will be minimised where practicable. Workers will be made aware during driver training and site induction sessions of the potential adverse impact of reversing alarms and the need to minimise their use. To reduce the annoyance associated with reversing alarms, use of broadband reversing alarms (audible movement alarms) will be considered where this will not compromise safety. 	Project manager and contractor	Construction
26	Noise and vibration – construction	<ul style="list-style-type: none"> The community will be kept informed of the nature, timing and duration of impending works. The contractor will nominate a contact person in the construction 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	(consultation)	noise and vibration management plan to directly address any noise and/or vibration complaints that the community may have during the construction phase of the project.		
27	Noise and vibration – construction (management response strategy)	<ul style="list-style-type: none"> All noise complaints will be investigated and mitigation measure implemented where feasible. Consideration of noise mitigation measures will follow the receipt of a noise complaint. 	Project manager and contractor	Construction
28	Noise and vibration - vibration	<ul style="list-style-type: none"> Measures, including allowing adequate distance between rollers and adjacent buildings and/or using non vibrating rollers, will be used to minimise or prevent vibration impacts. The potential for damage to pipelines and other infrastructure would be monitored during blasting. 	Project manager and contractor	Construction
29	Soils and water quality - soil erosion, sedimentation and water quality	<ul style="list-style-type: none"> A soil and water management plan will be prepared as part of the CEMP for the proposal in accordance with Roads and Maritime specification G38 – Soil and Water Management and the Blue Book - Soils and Construction - Managing Urban Stormwater Volume 1 (Landcom 2004) and Volume 2D (DEC 2008a). The soil and water management plan will include but not be limited to: <ul style="list-style-type: none"> A primary erosion and sedimentation control plan and a maintenance schedule for ongoing maintenance of temporary erosion and sediment controls. A sediment basin management plan to guide appropriate management of runoff during construction and operation. An incident emergency spill plan which will include measures to avoid spillages of fuels, chemicals, and fluids onto any surfaces or into any adjacent/nearby waterways. An accredited soil conservationist will be engaged to provide advice during development and implementation of the soil and water 	Project manager and contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		management plan. The soil conservationist will regularly review and inspect works throughout the construction phase.		
30	Soils and water quality -soil erosion and sedimentation	<ul style="list-style-type: none"> • Sediment and erosion controls (including sediment basins), clean water diversions and culverts will be constructed and be on line before the commencement of earthworks. • Sediment basins will be regularly serviced and maintained to comply with water quality and capacity requirements. • Energy dissipaters will be installed to reduce flow velocity and potential erosion as required. • Clearing of vegetation and stabilisation/revegetation activities will be carried out progressively to limit the time disturbed areas are exposed to erosion processes. • Site stabilisation of disturbed areas will be undertaken progressively as stages are completed. • Topsoil will be stockpiled separately for possible reuse in landscaping and rehabilitation works. • During construction of trenches for utility pipeline relocations, topsoil will be excavated separately to the subsoil and would be placed on top of the backfilled trenches to promote rapid regeneration of groundcover vegetation. • High risk soil and erosion activities such as earthworks will not be undertaken immediately before or during high rainfall or wind events. • Permanent catch drains will be installed behind proposed cut faces to act as diversion drains during the construction phase. • Erosion and sediment control measures will be maintained until the works are complete and areas are stabilised by revegetation. 	Project manager and contractor	Construction
31	Soils and water quality -water contamination	<ul style="list-style-type: none"> • All fuels, chemicals, and liquids will be stored at least 50 metres away from any drainage lines and would be stored in an impervious bunded area within the compound sites. 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> • The refuelling of plant and planned maintenance of machinery and plant will be undertaken 50 metres away from waterways. • Machinery will be checked daily for leaks of oil, fuel or other liquids. • Control of dirty water will be managed onsite to avoid release in to drainage lines and/or waterways. • Potable water will be used for wash down. • Containment material will be used to capture/filter water used in vehicle wash- downs. • Concrete truck washouts will be undertaken within a designated bunded area of an impervious surface or undertaken off-site. • Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) will be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls. A record will be kept of these inspections. • Emergency spill kits will be kept on-site at all times. • All staff will be inducted about incident and emergency procedures and made aware of the locations of emergency spill kits. • Should a spill occur during construction, the emergency response plan will be implemented, and the Roads and Maritime senior regional environmental officer contacted. OEH will also be notified as per Part 5.7 of the POEO Act. 		
32	Soils and water quality -soil contamination	<ul style="list-style-type: none"> • If soil contamination is discovered during construction, works will cease immediately, the site will be temporarily fenced and access would be restricted. Soil sampling and analysis would be conducted to assess the extent and nature of the contamination. Remediation would be conducted in line with the guidelines in <i>Managing Land Contamination: Planning Guidelines SEPP 55–Remediation of Land</i> (NSW Government 1998). 	Project manager and contractor	Construction
33	Landscape and	<ul style="list-style-type: none"> • The proposed bridge will be designed in accordance with Roads and 	Project manager	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	visual - visual impacts of proposal	<p>Maritime's bridge aesthetics guidelines (RTA 2003).</p> <ul style="list-style-type: none"> The detailed design of the bridge will be kept to a simple, clean structure with any services to be appropriately concealed in the design of the bridge as far as practicable. In the design development, consideration will be given to rounding the tops of the cuttings to soften the appearance The footprint for construction works will be kept to a minimum to minimise earthworks and maintain existing stands of vegetation wherever possible. 		
34	Landscape and visual - views of sediment basins	<ul style="list-style-type: none"> Permanent water quality basins will be shaped to create a natural appearance and to soften the visual impact where practicable. 	Project manager	Pre-construction
35	Landscape and visual - visual impacts on existing bridge	<ul style="list-style-type: none"> Pavement will be removed and the surface revegetated at the approaches to the existing heritage bridge. Appropriate barriers would be installed to prevent public road access. The barriers considered will include alternatives that are in keeping with the heritage value of the bridge. 	Project manager and contractor	Pre-construction
36	Landscape and visual - visual impacts of proposal on residences 1 and 3	<ul style="list-style-type: none"> Landscape treatments, including vegetation screens, will be implemented to screen residences 1 and 3, which are in close proximity to the road corridor, as early as possible. Revegetation will use a combination of planted and seeded material to provide short to medium term visual screen to the residences. 	Project manager	Construction
37	Landscape and visual - visual impacts of construction works	<ul style="list-style-type: none"> Fencing with material attached (eg shade cloth) to shield views will be provided around the construction compound and other areas where feasible. The visual intrusiveness of fencing required for safety purposes, eg on the tops of cuttings, will be minimised by setting back and using fences appropriate to a rural setting. 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> The work site will be left in a tidy manner at the end of each work day. 		
38	Landscape and visual - views of cut and fill batters	<ul style="list-style-type: none"> Batters will be revegetated progressively and vegetated slopes would not exceed a grade of 2:1. 	Project manager	Construction
39	Landscape and visual - views of sediment basins	<ul style="list-style-type: none"> Locally native plantings will be used to further soften the appearance of these structures and integrate them into the landscape. 	Project manager and contractor	Construction
40	Landscape and visual - visual impacts of vegetation removal	<ul style="list-style-type: none"> Vegetation removal will be minimised as much as possible. Vegetation will be re-established at disturbed edges. Revegetation will use locally native species. 	Project manager and contractor	Construction
41	Land use and property - property acquisition	<ul style="list-style-type: none"> The land to be acquired within the Planning Agreement Areas will be minimised as far as possible. All property acquisition will be undertaken in accordance with the <i>Roads and Maritime Land Acquisition Information Guide</i> (RTA, 2011c) and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i>. Roads and Maritime will consult with affected landowners and tenants on an ongoing basis regarding the status and timing of acquisition. 	Project manager	Pre-construction
42	Traffic - construction impacts to traffic	<ul style="list-style-type: none"> A detailed traffic management plan will be prepared in accordance with the <i>Traffic Control at Work Sites Manual</i> (RTA 2010a) and <i>Roads and Maritime Specification G10 – Control of Traffic</i>. The traffic management plan will include measures to provide safe access points to work areas from the adjacent road network, safety barriers where necessary, temporary speed restrictions when necessary, adequate sight distances and prominent warning signage. 	Project manager and contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
43	Traffic - construction impacts to Wagga Wagga City Council roads	<ul style="list-style-type: none"> A road condition survey will be undertaken on Camp Access Road, the quarry access road and any other local roads used for haulage of materials before and after construction. Defects arising from construction access will be rectified before completion of construction unless otherwise agreed with Wagga Wagga City Council. 	Project manager and contractor	Pre-construction and construction
44	Traffic - construction impacts to traffic	<ul style="list-style-type: none"> Works to tie in the new alignment to existing roads will be undertaken during off-peak periods where possible to minimise the impacts on traffic flow. Construction traffic will enter/exit the construction zone only in areas designated for this purpose in the Traffic Management Plan. The community will be kept informed about upcoming road construction activities, including through advertisements in the local media and by prominently placed advisory notices. Any disruption to access for road users will be notified in advance in accordance with the <i>Community Participation and Communications: A resource manual for staff</i> (RTA 2010b). 	Project manager and contractor	Construction
45	Traffic - construction impacts to property access	<ul style="list-style-type: none"> Property access will be maintained at all times unless otherwise agreed with affected property owners. Where changes to access arrangements are necessary, Roads and Maritime will advise owners and tenants and consult with them on alternate access arrangements. 	Project manager and contractor	Construction
46	Traffic - construction impacts to cyclists and pedestrians	<ul style="list-style-type: none"> A procedure will be developed for providing access for pedestrians and cyclists through the proposal during construction if necessary. 	Project manager and contractor	Construction
47	Aboriginal heritage - damage to, or	<ul style="list-style-type: none"> An Aboriginal heritage management plan will be prepared as part of the CEMP. The plan would include the <i>Standard Management Procedure: Unexpected Archaeological Finds</i> (Roads and Maritime 	Project manager and contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	loss of, AHIMS sites #56-1-0098 (L-ST-1) and #56-1-0096 (L-IF-1)	<p>2011b).</p> <ul style="list-style-type: none"> • A 40 metre buffer will be established around site #56-1-0096 (L-IF-1). • The locations of the sites #56-1-0098 (L-ST-1), #56-1-0096 (L-IF-1) and #56-1-0051 (LN5) will be marked as no-go areas on all relevant site plans and work instructions, and physically on site. • Temporary exclusion fencing will be erected at the following locations: <ul style="list-style-type: none"> - Along the eastern boundary of the proposal, west of sites #56-1-0098 (L-ST-1) and #56-1-0096 (L-IF-1). - Along the southern boundary of the stockpile site located north of site #56-1-0096 (L-IF-1). - Around the modified tree located near the existing bridge – site #56-1-0051 (LN5). • Exclusion fencing will be appropriately secure. Installation and removal of the barriers will be undertaken so as not to cause harm to the immediate area surrounding the sites. • All crews will be inducted before works commence regarding the nature of the Aboriginal heritage resource in the study area and the penalties for breaches of the <i>National Parks and Wildlife Act 1974</i>. 		
48	Aboriginal heritage - impacts on potential unknown sites of Aboriginal heritage significance	<ul style="list-style-type: none"> • Construction vehicles will be confined to the limits of the proposal. In the event of an unexpected find of an Aboriginal heritage item (or suspected item), all works in the vicinity of the find must cease and Roads and Maritime Aboriginal Cultural Heritage Advisor and the Senior Environmental Officer will be contacted immediately for advice on how to proceed. Steps in the RTA Standard Management Procedure: Unexpected Archaeological Finds (RTA, 2011b) must be followed. 	Project manager and contractor	Construction
49	Non-Aboriginal heritage - damage to, or loss of, items of	<ul style="list-style-type: none"> • If archaeological remains or an item (or suspected item) of non-Aboriginal heritage is discovered, the Roads and Maritime Standard Management Procedure: Unexpected Archaeological Finds (RTA, 2011b) will be implemented including that all work in the area of the 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	non-Aboriginal heritage	find would cease immediately and would not recommence until the heritage value and associated protection and any approval requirements have been determined. Roads and Maritime would notify OEH if any item (or suspected item) of non-Aboriginal heritage is found during construction to determine the appropriate course of action.		
50	Non-Aboriginal heritage - impacts to the Home of the Soldier Wall	<ul style="list-style-type: none"> If construction activities are required near the 'Home of the Soldier Wall' on Camp Access Road, a temporary barrier will be installed to protect the wall. 	Project manager and contractor	Construction
51	Air quality - general air quality impacts	<ul style="list-style-type: none"> Construction activities will be managed to minimise the emission of dust, smoke, and other substances. 	Project manager and contractor	Pre-construction
52	Air quality - dust	<ul style="list-style-type: none"> Exposed surfaces will be watered regularly to minimise dust emissions. Clearing of natural vegetation will be minimised where possible. During periods of high winds, dust generating activities will cease. Stabilisation of disturbed surfaces will take place as soon as practicable. Stockpiles or areas that may generate dust will be managed to suppress dust emissions in accordance with Roads and Maritime Stockpile Site Management Guideline (RTA 2011a). 	Project manager and contractor	Construction
53	Air quality - other emissions	<ul style="list-style-type: none"> Plant and machinery will be turned off when not in use as much as possible and will be fitted with emission control devices complying with Australian Design Standards where practicable. Construction plant and equipment will be maintained in a good working condition in order to limit impacts on air quality. No burning of any materials will occur. 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> During transportation on the Olympic Highway, Camp Access Road and the quarry road, loads will be adequately covered. 		
54	Socio-economic - general impacts to residences	<ul style="list-style-type: none"> Potentially affected residences will be contacted before the commencement of works, in accordance with Roads and Maritime <i>Community Engagement and Communication Manual</i> (Roads and Maritime Services 2012). Residents will be notified via door knocks, newsletters or letter box drops providing information on the proposed works, working hours and a contact name and number should any complaints wish to be registered. 	Project manager and contractor	Pre-construction
55	Socio-economic - property access	<ul style="list-style-type: none"> Affected landowners and tenants will be consulted in providing alternate access arrangements that are suitable to facilitate existing activities. 	Project manager and contractor	Pre-construction
56	Socio-economic - social loss of land zoned for conservation	<ul style="list-style-type: none"> Roads and Maritime will consult with OEH and Wagga Wagga City Council to minimise social impacts relating to the loss of land from the Planning Agreement Areas. 	Project manager	Pre-construction
57	Socio-economic - local economy	<ul style="list-style-type: none"> Local goods and services will be sourced wherever possible during construction. 	Project manager and contractor	Construction
58	Waste management - general impacts of waste	<ul style="list-style-type: none"> A waste management plan will be included in the CEMP. 	Project manager and contractor	Construction
59	Waste management - general impacts of waste	<ul style="list-style-type: none"> Resource management hierarchy principles will be followed: <ul style="list-style-type: none"> Avoid unnecessary resource consumption as a priority. Recover resources as far as is practicable (including reuse of materials, reprocessing, and recycling and energy recovery). Disposal is undertaken as a last resort (in accordance with the <i>Waste Avoidance and Resource Recovery Act 2001</i>). 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> • Site inductions will be undertaken (and recorded) by a site supervisor for all staff, to provide a thorough knowledge of all key environmental/safety issues, including waste disposal protocols. • Bulk project waste (eg fill) sent to a site not owned by Roads and Maritime (excluding OEH licensed landfills) for land disposal is to have prior formal written approval from the landowner, in accordance with Roads and Maritime <i>Environmental Direction No. 20 – Legal Off-site disposal of Bulk RTA Project Wastes</i>. • If coal tar asphalt is identified and is to be removed, it is to be disposed of to landfill in accordance with Roads and Maritime <i>Environmental Direction No.21 – Coal Tar Asphalt Handling and Disposal</i>. • All waste will be disposed of at appropriately approved and licensed facilities. • Cleared weed free vegetation will be mulched and reused on-site to stabilise disturbed soils where possible. Weedy mulch will either be composted to sterilise propagules and seeds, or not reused. • Waste will not be burned at the site • All wastes will be managed and disposed of in accordance with the Waste Classification Guidelines (DECC 2008b) and managed in accordance with the POEO Act • Garbage receptacles will be provided and recycling of materials encouraged. Rubbish will be transported to an appropriate waste disposal facility • Where appropriate, excess roadside materials will be disposed of according to the following (in order): <ul style="list-style-type: none"> - Transfer to nearby Roads and Maritime projects for immediate use. - Transfer to an approved Roads and Maritime stockpile site for future use during projects or routine maintenance. - Transfer to a Roads and Maritime approved site for reuse on 		

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>concurrent private/local government project.</p> <ul style="list-style-type: none"> - Disposal at an approved materials recycling or waste disposal facility. - As otherwise provided for by the relevant waste legislation. <ul style="list-style-type: none"> • Waste material, other than vegetation and tree mulch, will not be left on site once the works have been completed. 		
60	Waste management - obsolete infrastructure	<ul style="list-style-type: none"> • Any obsolete infrastructure will be decommissioned and not left in a state that will negatively impact upon the Council, private land owners or the environment. 	Project manager and contractor	Construction
61	Climate change - flooding from extreme rainfall events	<ul style="list-style-type: none"> • Detailed design, including drainage requirements, will take into consideration the effect of climate change on the proposal. 	Project manager	Pre-construction
62	Climate change - greenhouse emissions	<ul style="list-style-type: none"> • Investigations into opportunities for reducing greenhouse emissions during construction and operation of the proposal will be undertaken during the detailed design phase. 	Project manager	Pre-construction
63	Climate change - greenhouse emissions	<ul style="list-style-type: none"> • Delivery of materials with full loads will be undertaken from local suppliers where possible. • Appropriately sized construction equipment, plant and vehicles will be used. • Regular servicing of equipment will be undertaken to maintain optimal performance, and to minimise down time (which can improve overall efficiency). • The layout of access, machinery and facilities will be designed to minimise movement and vegetation clearing. • Investigation of alternative fuels and power sources to be used will be undertaken and implemented, where appropriate. • Energy efficiency and related carbon emissions of vehicle and plant 	Project manager and contractor	Pre-construction and construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>equipment will be considered, where possible.</p> <ul style="list-style-type: none"> Material and waste supply and departure scheduling will be undertaken to optimise full loads and minimise required vehicle trips. Minimisation of clearing of natural vegetation in the road design process will be considered and undertaken where feasible. 		
64	Demand on resources - resource consumption	<ul style="list-style-type: none"> Water captured in construction sediment basins will be reused for dust suppression, watering of landscaped areas and any other suitable construction activity where feasible and appropriate. Procurement will endeavour to use materials and products with a recycled content where that material or product is cost and performance effective. Excavated material will be reused on-site for fill where feasible and appropriate. 	Project manager and contractor	Pre-construction and construction
65	Hazard and risk - bushfire	<ul style="list-style-type: none"> The Construction Environmental Management Plan will include provisions to minimise the potential for ignition or spread of fire. This will include the preparation of a Bushfire Management Plan. Consultation with the local Rural Fire Service would be undertaken during the preparation of the Bushfire Management Plan. 	Project manager	Pre-construction
66	Hazard and risk - safety	<ul style="list-style-type: none"> A safety audit of the design will be undertaken before construction. 	Project manager	Pre-construction
67	Hazard and risk - blasting	<ul style="list-style-type: none"> The Construction Environmental Management Plan will contain a blast management plan. The plan will detail the objectives of blasting, hazards and risks, site-specific requirements, the blast process, safety measures and the review process. 	Project manager and contractor	Pre-construction
68	Hazard and risk - safety	<ul style="list-style-type: none"> All occupational Health and Safety requirements will be fulfilled during the works. Public access to the work site will be prohibited and access barriers would be erected. 	Project manager and contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
69	Hazard and risk - blasting	<ul style="list-style-type: none"> • Blasting will be conducted by licensed blasting technicians. • Security arrangements will be put in place for the blast site. The blast site will be secured with staffed barricades and only authorised persons would have access to the site. • Exclusion zones will be established and maintained before blasting. • Blast mats will be used to minimise rock fly where necessary. 	Project manager and contractor	Construction

7.3 Licensing and approvals

The proposal will require the concurrence of the Director-General of the Office of Environment and Heritage due to likely significant impacts on Box-Gum Woodland. A species impact statement has been prepared in accordance with the requirements of the Director General and Division 2 of Part 6 of the TSC Act.

The proposal has been determined to be a 'controlled action' by the Australian Government Department of the Environment. It will require the approval of the Australian Government Minister for the Environment under the EPBC Act.