

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. A summary of site-specific environmental safeguards is provided and the licence and/or approval requirements required prior to construction are also listed.

7.1 Environmental management plans

A number of safeguards and management measures have been identified in the REF 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 safeguards and 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) will be prepared to describe the safeguards and management measures identified. The CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by the TfNSW Environment Officer, prior to 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 QA Specification G36 – *Environmental Protection (Management System)*, QA Specification G38 – *Soil and Water Management (Soil and Water Plan)*, QA Specification G40 – *Clearing and Grubbing*, QA Specification G10 – *Traffic Management*.

7.2 Summary of safeguards and management measures

Environmental safeguards and management measures outlined in this REF will be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards and management measures will 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 safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
GEN1	General – minimise environmental impacts during construction	<p>A CEMP will be prepared and submitted for review and endorsement of the TfNSW Environment Manager prior to commencement of the activity.</p> <p>As a minimum, the CEMP will address the following:</p> <ul style="list-style-type: none"> • any requirements associated with statutory approvals • details of how the project will implement the identified safeguards outlined in the REF • issue-specific environmental management plans • roles and responsibilities • communication requirements • induction and training requirements • procedures for monitoring and evaluating environmental performance, and for corrective action • reporting requirements and record-keeping • procedures for emergency and incident management • procedures for audit and review. <p>The endorsed CEMP will be implemented during the undertaking of the activity.</p>	Contractor / TfNSW Project Manager	Detailed design / Pre-construction	
GEN2	General – notification	All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.	Contractor / TfNSW Project Manager	Pre-construction	
GEN3	General – environmental awareness	<p>All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular “toolbox” style briefings.</p> <p>Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:</p> <ul style="list-style-type: none"> • areas of heritage sensitivity/heritage items • threatened species habitat • adjoining residential areas requiring particular noise management measures • alternative traffic arrangements. 	Contractor	Detailed design / Pre-construction	

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
BIO1	Biodiversity	<p>A Flora and Fauna Management Plan will be prepared in accordance with TfNSW's <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a) and implemented as part of the CEMP. It will include, but not be limited to:</p> <ul style="list-style-type: none"> plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas requirements set out in the <i>Landscape Design Guideline</i> (Roads and Maritime Services, 2018a) pre-clearing survey requirements procedures for unexpected threatened species finds and fauna handling procedures addressing relevant matters specified in the <i>Policy and guidelines for fish habitat conservation and management</i> (Department of Primary Industries Fisheries, 2013) protocols to manage weeds and pathogens. 	Contractor	Detailed design / Pre-construction	Section 4.8 of QA G36 <i>Environment Protection</i>
BIO2	Removal of native vegetation	Areas for native vegetation and habitat removal will be minimised through detailed design.	Contractor	Detailed design	Appendix D
BIO3	Removal of native vegetation	<p>Pre-clearing surveys and habitat removal will be undertaken in accordance with <i>Guide 1: Pre-clearing process</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a).</p> <p>Where possible, hollow bearing trees should be retained or relocated.</p>	Contractor	Pre-construction	Appendix D
BIO4	Removal of native vegetation	Vegetation removal will be undertaken in accordance with <i>Guide 4: Clearing of vegetation and removal of bushrock</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a).	Contractor	Construction	Appendix D
BIO5	Removal of native vegetation	Native vegetation will be re-established in accordance with <i>Guide 3: Re-establishment of native vegetation</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a).	TfNSW	Post construction	Appendix D
BIO6	Removal of native vegetation	The unexpected species find procedure will be followed under the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal area.	Construction contractor	Construction	Appendix D
BIO7	Aquatic habitat	Aquatic habitats will be protected in accordance with <i>Guide 10: Aquatic habitats and riparian zones</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a) and Section 3.3.2 Standard precautions and mitigation measures of the <i>Policy and guidelines for fish habitat conservation and management Update 2013</i> (Department of Primary Industries Fisheries, 2013).	Contractor	Construction	Appendix D
BIO8	Injury and mortality of fauna	Fauna will be managed in accordance with <i>Guide 9: Fauna handling</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a).	Contractor	Construction	Appendix D

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
BIO9	Invasion and spread of weeds	Weed species will be managed in accordance with <i>Guide 6: Weed management</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a).	Contractor	Construction	Appendix D
BIO10	Invasion and spread of pests	Pest species will be managed within the proposal area.	Contractor	Construction	Appendix D
BIO11	Invasion and spread of pathogens and disease	Pathogens will be managed in accordance with <i>Guide 2: Exclusion zones</i> of the <i>Biodiversity Guidelines: Protecting and managing biodiversity of RTA projects</i> (Roads and Traffic Authority, 2011a).	Contractor	Construction	Appendix D
HYD1	Blockage causing increased flooding potential	Develop a blockage assessment of the pavement and cross drainage strategy.	Contractor	Detailed design /Pre-construction	Best practice
HYD2	Overland flows causing localised flooding	Flow diversion bunds and sediment fencing are to be used for redirection of overland flows to dedicated management areas including sediment basins and ultimately to discharge locations.	Contractor	Construction	Best practice
WAT1	Soil degradation and water pollution	A Soil and Water Management Plan will be prepared and implemented as part of the CEMP. The plan will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction. The Soil and Water Management Plan will be reviewed by a soil conservationist on the TfNSW list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services. The Plan will then be revised to address the outcomes of the review.	Contractor	Detailed design / Pre-construction	Section 2.1 of <i>QA G38 Soil and Water Management</i>
WAT2	Soil degradation and water pollution	Site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. The Plan/s will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather. The site specific Erosion and Sediment Control Plan/s will be developed in accordance with the principles and requirements in <i>Managing Urban Stormwater – Soils and Construction, Volume 1</i> (Landcom 2004) and <i>Volume 2D</i> (DECCW 2008), commonly referred to as the 'Blue Book'.	Contractor	Detailed design / Pre-construction	Section 2.2 of <i>QA G38 Soil and Water Management</i>
WAT3	Run-off velocity (scour)	Level spreaders will be installed at all discharge locations to the natural surface used to reduce velocity and depth of the flows reaching the natural watercourses /s. New discharge outlets will be designed with appropriate energy dissipation and scour protection measures as required to minimise the potential for sediment disturbance and	Contractor	Detailed design / Pre-construction	Best practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>resuspension in the receiving waters. Outlet design and energy dissipation/scour protection measures will be informed by drainage modelling.</p> <p>Check dams or velocity managing devices are installed into flow paths particularly in areas with steep gradients.</p>			
WAT4	Water quality	Maintenance requirements for all stormwater treatment systems and devices installed as part of the proposal will be identified and included in relevant operational maintenance schedules/systems.	TfNSW	Post construction	Best practice
WAT5	Spill containment	Dedicated diversion equipment will be implemented for the storage of spills to avoid direct discharge to receiving watercourses.	Contractor	Detailed design / Pre-construction	Best practice
WAT6	Sediment run-off from construction site	Sediment basins will be designed and constructed for the collection of sediment runoffs through reduction of flow velocity.	Contractor	Construction	Section 2.2 of QA G38 Soil and Water Management
WAT7	Sediment run-off from construction site	The extent of ground disturbance and exposed soil will be minimised to the greatest extent practicable to minimise the potential for erosion.	Contractor	Construction	Section 2.2 of QA G38 Soil and Water Management
WAT8	Sediment run-off from construction site	Disturbed ground and exposed soils will be permanently stabilised and proposed landscaped areas will be suitably profiled and vegetated as soon as possible following disturbance to minimise the potential erosion.	Contractor	Construction	Section 2.2 of QA G38 Soil and Water Management
CON1	Contaminated land	<p>A targeted Phase 2 investigation providing general coverage of the proposed alignment and areas of potential contamination sources (including areas where fill would be encountered during construction and hydrocarbon migration from the United Petrol Station) will be undertaken. The investigation will address the potential risk that fill material may pose to construction workers and future users of the site.</p> <p>Assessments will be carried out in accordance with guidance made or endorsed by the NSW EPA. The contaminated land investigations will be carried out and the report verified by a suitably qualified and experienced environmental consultant.</p>	TfNSW	Detailed design / Pre-construction	Appendix G
CON2	Contaminated land	<p>A Contaminated Land Management Plan will be prepared in accordance with <i>the Guideline for the Management of Contamination</i> (TfNSW, 2013) and implemented as part of the CEMP. The plan will include, but not be limited to:</p> <ul style="list-style-type: none"> capture and management of any surface runoff contaminated by exposure to the contaminated land 	Contractor	Detailed design / Pre-construction	Section 4.2 of QA G36

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> any further investigations required to determine the extent, concentration and type of contamination management of the remediation and subsequent validation of the contaminated land, including any certification required measures to ensure the safety of site personnel and local communities during construction. <p>If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the TfNSW Environment Manager and/or EPA.</p>			<p><i>Environment Protection</i></p> <p>Appendix G</p>
CON3	Pollution from run-off	<p>The following measures will be included to limit sediment and other contaminations entering receiving waterways:</p> <ul style="list-style-type: none"> chemicals will be stored within a sealed or bunded area appropriate controls will be in place where plant is stored run-off from ancillary facilities will be controlled and treated before discharging into downstream waterways vehicle movements will be restricted to designated pathways where feasible. <p>Areas that will be exposed for extended periods, such as car parks will be stabilised where feasible.</p>	Contractor	Construction	Additional safeguard
CON4	Accidental spill	<p>A site specific emergency spill plan will be developed, and include spill management measures in accordance with the TfNSW <i>Code of Practice for Water Management</i> (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including TfNSW and EPA officers).</p>	Contractor	Detailed design / Pre-construction	Section 4.3 of QA G36 <i>Environment Protection</i>
TRA1	Traffic and transport	<p>A Traffic Management Plan will be prepared and implemented as part of the CEMP. The plan will be prepared in accordance with the <i>Traffic Control at Work Sites Manual</i> (TfNSW, 2020c) and <i>QA Specification G10 Control of Traffic</i>. The plan will include:</p> <ul style="list-style-type: none"> confirmation of haulage routes measures to maintain access to local roads and properties site specific traffic control measures (including signage) to manage and regulate traffic movement measures to maintain pedestrian and cyclist access requirements and methods to consult and inform the local community of impacts on the local road network access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads. a response plan for any construction traffic incident 	Contractor	Detailed design / Pre-construction	<i>QA Specification G10</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic monitoring, review and amendment mechanisms. 			
TRA2	Traffic and transport	<ul style="list-style-type: none"> The local bus operators will be consulted to confirm alternative temporary bus stop and operations during construction. The local community will be notified about the agreed local temporary bus stop location, as coordinated and managed under the consultation strategy. 	Contractor	Construction	
TRA3	Property access	<ul style="list-style-type: none"> Property access will be maintained where feasible and reasonable and property owners will be consulted before starting any work that may temporarily restrict or control access. (Side) road and lane closures will be minimised where feasible and reasonable. 	Contractor	Construction	
NOI1	Construction noise and vibration	<p>A Noise and Vibration Management Plan will be prepared and implemented as part of the CEMP. The plan will generally follow the approach in the <i>Interim Construction Noise Guideline</i> (Department of Environment and Climate Change, 2009) and include the following:</p> <ul style="list-style-type: none"> the plan will consider potential vibration impacts associated with construction activities and would identify feasible and reasonable measures to mitigate these impacts, including safe working distances all potential significant noise and vibration generating activities associated with the activity feasible and reasonable mitigation measures to be implemented, taking into account <i>Beyond the Pavement 2020: Urban design approach and procedures for road and maritime infrastructure planning, design and construction</i> (TfNSW Centre for Urban Design, 2020) a monitoring program to assess performance against relevant noise and vibration criteria arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures contingency measures to be implemented in the event of non-compliance with noise and vibration criteria stakeholder engagement will be a key feature of these measures, particular with key stakeholders such as the Hydro Majestic Hotel. vibration sensitive receivers identified will require careful consideration when planning works and, dependent on the nature of the works, may require vibration monitoring throughout the proposal. 	Contactar	Detailed design / Pre-construction	Section 4.6 of QA G36 <i>Environment Protection</i>
NOI2	Out of hours works	<p>As part of the Noise and Vibration Management Plan, an out-of-hours work protocol will be developed, including any requirements set under the EPL which defines:</p> <ul style="list-style-type: none"> all scheduled and planned out-of-hours activities 	Contractor	Pre-construction/ Construction	Appendix I

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> any oversized and other deliveries needing to take place out-of-hours as required by the police or other authorities for safety reasons other tie-in, utility connection and intersection work that may need to take place out-of-hours for road user safety issues out-of-hours emergency work needed to prevent the loss of life, property, to prevent harm or as agreed under negotiation with EPA and affected sensitive receivers the record-keeping process for capturing agreed and emergency out-of-hours work very noisy activities should, as much as practicable, be programmed for normal working hours. If the work cannot be undertaken during the day, it should be completed before 12:00am. In particular, there should be no jackhammering or saw cutting after midnight. 			
NOI3	Construction noise and vibration	<p>All sensitive receivers (eg schools, local residents) likely to be affected will be notified at least seven days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of:</p> <ul style="list-style-type: none"> the proposal construction period and construction hours contact information for project management staff complaint and incident reporting how to obtain further information. 	Contractor	Detailed design / Pre-construction	
NOI4	Construction noise and vibration	<p>The following general mitigation measures will be applied as practicable:</p> <ul style="list-style-type: none"> limit work to daylight hours and only night works during notified road closures. perform noisy work during less sensitive time periods select low-noise plant and equipment ensure equipment has quality mufflers installed where practicable use smaller/lower capacity plant in reference to the safe working distances where possible, concentrate noisy activities at one location and move to another as quickly as possible vehicle movements outside construction hours, including loading and unloading operations, should be minimised and avoided where possible ensure equipment is well maintained and fitted with adequately maintained silencers use only necessary sized equipment implement worksite induction training, educating staff on noise sensitive issues and the need to make as little noise as possible consider alternatives, such as manually adjustable or ambient noise sensitive types ("smart" reversing alarms) and closed-circuit TV systems consider installing temporary construction noise barriers install noise-control kits for noisy mobile equipment and shrouds around stationary plant, as necessary. 	Contractor	Pre-construction / Construction	Section 6 of Appendix I

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
NOI5	Construction noise	Noise management controls will be implemented early in the work program to benefit receivers while the proposal is being built.	Contractor	Detailed design / Pre-construction	Appendix I
NOI6	Construction noise and vibration	Where possible, plant will be located as far from residences as possible and behind site structures, barriers, screens and/or noise walls. Plan for the use of less noise/vibration equipment where reasonable and feasible.	Contractor	Pre-construction / Construction	Appendix I
NOI7	Construction vibration	Any proposed works within the minimum safe working distances will be undertaken with concurrent vibration measurements to ensure the cosmetic damage criteria are not exceeded at sensitive receiver locations.	Contractor	Construction	REF Table 6-27 Appendix I
NOI8	Construction vibration – heritage structures	Vibration resulting from construction and received at any heritage structure will be managed in accordance with <i>German Standard DIN 4150: Part 3 – 1999 Structural Vibration in Buildings: Effects on Structures</i> . Where required, monitoring will be undertaken to ensure guideline values are achieved, or additional vibration mitigation measures developed to manage risks.	Contractor	Construction	REF Table 6-23 <i>Structural Vibration, Part 3: Effects of Vibration on Structures (DIN 4150-3)</i> Appendix I
NOI9	Operational noise	Architectural treatment will be investigated for properties where there are exceedances of the noise criteria. Based on the concept design, this will likely include fourteen residential properties: <ul style="list-style-type: none"> • 2 Station Street • 4 Station Street • 40 Great Western Highway • 50 Great Western Highway • 100 Great Western Highway • 102 Great Western Highway • 104 Great Western Highway • 106 Great Western Highway (proposed acquisition) • 108 Great Western Highway • 110-114 Great Western Highway • 116-118 Great Western Highway • 14 Delmonte Avenue • 122 Great Western Highway • 126 Great Western Highway. 	Contractor	Detailed design	Appendix I
ABO1	Aboriginal heritage	The <i>Standard Management Procedure – Unexpected Heritage Items</i> (Roads and Maritime Services, 2015d) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where TfNSW does not	Contractor	Construction	Section 4.9 of QA G36 <i>Environment Protection</i>

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the procedure) is not in place. Work will only re-commence once the requirements of that procedure have been satisfied.</p>			
HER1	Non-Aboriginal heritage	<p>A Non-Aboriginal Heritage Management Plan will be prepared and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented to avoid and mitigate impacts to Non-Aboriginal heritage. The plan will be prepared in consultation with Heritage NSW.</p>	Contractor	Detailed design, Pre-construction	Section 4.10 of QA G36 <i>Environment Protection</i>
HER2	Non-Aboriginal heritage	<p>The detailed design will be developed and refined in consultation with either a heritage architect or a built heritage consultant. The detailed design would aim to further minimise the impact of the proposal, with particular reference to the pedestrian bridge through the use of appropriate form, proportion and materials. Bulk should be minimised, and new built forms should be clearly separate from existing heritage fabric. Where appropriate, the detailed design should also respond to existing and significant architectural detail, such as the architectural detailing of the station building, or the footbridge. Detailed design should be undertaken in accordance with appropriate Sydney Trains and TfNSW guidelines, including:</p> <ul style="list-style-type: none"> • Railway Footbridges Heritage Conservation Strategy (NSW Government Architect's Office Heritage Group for Sydney Trains, 2016) • Heritage Platforms Conservation Management Strategy (Australian Museum Consulting for Sydney Trains, 2015) • Heritage Technical Note: Installation of New Electrical and Data Services at Heritage Sites (Sydney Trains, 2017a) • Station Components Guide (Sydney Trains 2017b). 	Contractor	Detailed design	Appendix J SoHI recommendation 1
HER3	State heritage	<p>A Section 60 Application would be required for proposed works within the SHR curtilage of Medlow Bath Railway Station. The Application must be granted prior to works commencing.</p>	TfNSW	Pre-construction	Appendix J SoHI recommendation 2
HER4	Archaeology	<p>An Historic (non-Aboriginal) Archaeological Assessment will be prepared for the Hydro Majestic land proposed for use for the alternate design arrangement for Bellevue Crescent known as Lots 3, 4, 5 and 20 of DP25570. The assessment will be undertaken by a suitably qualified archaeologist in accordance with the <i>Heritage Act 1977</i> and the Heritage NSW publication <i>Assessing Significance of Historical Archaeological Sites and Relics</i> (2009). The purpose of the assessment is to determine the nature, extent and significance of any archaeological or historical resources associated with the former Glenara Cottage in this area and provide appropriate management recommendations in relation to the proposal.</p>	TfNSW	Pre-construction	Appendix J SoHI recommendation 3

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
HER5	Non-Aboriginal heritage awareness training	<ul style="list-style-type: none"> Works within the proposal area are being undertaken in an area of heritage significance. Prior to works commencing, contractors will be briefed as to the sensitive nature of the proposal area and informed of any recommended mitigation measures or controls required. Non-Aboriginal heritage awareness training will be provided for all contractors and personnel prior to commencement of works to outline the identification of potential heritage items and associated procedures to be implemented in the event of the discovery of non-Aboriginal heritage materials, features or deposits (that is, unexpected finds), or the discovery of human remains 	Contractor	Pre-construction	Appendix J SoHI recommendation 4
HER6	Non-Aboriginal heritage protection of significant fabric	<p>Works will be undertaken with care. To avoid impact to significant fabric during the construction of the proposal the following is recommended:</p> <ul style="list-style-type: none"> machinery should be placed with sufficient clearance to significant heritage structures to avoid any inadvertent harm to significant fabric or incidental damage from vibration as per the TfNSW recommended minimum working distances for vibration intensive plant (refer Table 6-27 of the REF). In particular, care should be taken when working near: <ul style="list-style-type: none"> Hydro Majestic's stone fence Medlow Bath Railway Station platform structures, platform edges and footbridge Former Post and Telegraph Store Urunga Melbourne House, Cosy Cot and Sheleagh Cottage, in particular Lot 1 Great Western Highway Sandstone Railway culvert archaeologically sensitive vacant land north of the United Petrol Station Protection of significant fabric – Hydro Majestic stone fence <ul style="list-style-type: none"> protective barriers or fencing should be erected between the works corridor boundary and the Hydro Majestic's stone fence for the duration of works within the vicinity of this significant fabric to ensure no inadvertent harm occurs machinery and works should be placed with sufficient clearance to significant fabric and associated protective barriers to avoid inadvertent harm from machinery or incidental damage from vibration vibration monitoring of the stone fence should be put in place for the duration of works Protection of significant fabric – Sandstone Railway culvert 	Contractor	Pre-construction	Appendix J SoHI recommendation 5

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> ○ redundancy of the Sandstone Railway culvert should not include work to significant fabric ○ if closure or blocking of the culvert is required, these works should be undertaken in a manner that would not impact significant fabric ○ if work to significant fabric is required, this should be undertaken in consultation with either a heritage architect or heritage consultant, and be conducted in a manner that minimises harm as much as practicable ● Protection of significant fabric – bus shelter <ul style="list-style-type: none"> ○ measures should be put place to protect significant fabric of the bus shelter during its proposed removal and relocation ○ relocation position, and details of where and how it will be removed, stored and relocated, should be determined in consultation with Blue Mountains City Council ○ after relocation, conservation of the mural should be undertaken to prevent further loss, or to sympathetically reinstate missing portions ● Protection of significant fabric – advertising sign <ul style="list-style-type: none"> ○ if removal of the advertising sign is required for the proposal, it should be salvaged and relocated ○ relocation position, and details of where and how it will be removed, stored and relocated, should be determined in consultation with Blue Mountains City Council ○ if removal of the advertising sign is not required for the proposal, appropriate measures should be put in place to protect it during proposed works, such as the installation of protective barriers or fencing ● Protection of significant fabric – potential archaeological site of former Glenara Cottage <ul style="list-style-type: none"> ○ prior to use as an ancillary facility / stockpile area, the vacant land north of the petrol station should be covered with geotextile, or other suitable protective material, to ensure no inadvertent harm to potential archaeological resources occurs ○ no ground scraping, levelling or landscaping of this area should occur before, during or after the use of the area as an ancillary facility / stockpile area ○ this protection measure may not be required if a Historic (non- Aboriginal) Archaeological Assessment does not identify any significant archaeological potential. 			
HER7	Protection and management of trees	A qualified arborist will be engaged to undertake an Arboricultural Impact Assessment of the proposal area, with a particular focus on trees associated with heritage items, Hydro Majestic (Blue Mountains LETP Item No.MB002), Avenue of trees (formerly Avenue of Radiata Pines)	Contractor	Pre-construction	Appendix J SoHI recommendation 6

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		(Item No.MB015) and Medlow Bath Hydro Majestic original walking track complex (only the parts within the grounds of the Hydro Majestic) (Blue Mountains LEP 2015 Item No.MB026) . Management and protection measures recommended in the Arboricultural Impact Assessment should be implemented accordingly to ensure the protection and management of significant trees throughout the implementation of the proposal.			
HER8	Tree replacement	Trees removed as part of the proposal within the heritage curtilage of Hydro Majestic (Item No.MB002), Avenue of trees (formerly Avenue of Radiata Pines) (Item No.MB015) or Medlow Bath Hydro Majestic original walking track complex (only the parts within the grounds of the Hydro Majestic) (Blue Mountains LEP 2015 Item No.MB026) will be replaced in a manner that is consistent with, and accurately reflect, the extent, nature and significance of the respective heritage item. The location, species and number of trees to be planted will be determined in consultation with the land owner, Blue Mountains City Council and a qualified arborist with reference to the identified heritage significance of the respective heritage item.	Contractor	Construction	Appendix J SoHI recommendation 7
HER9	Movable heritage	All moveable heritage identified as part of this assessment will be managed in accordance with a moveable heritage procedure. Moveable heritage identified on Hydro Majestic (Blue Mountains LEP Item No. MB002) land will be managed in accordance with Section 6.5, <i>Conserving Moveable Heritage, in the Hydro Majestic Hotel, Medlow Bath, Conservation Management Plan</i> (Graham Brooks and Associates, 2010).	Contractor	Construction	Appendix J SoHI recommendation 8
HER10	Before and after photographic record	<p>Prior to construction, an archival photographic recording of the heritage items impacted by the proposed works is to be prepared in accordance with the NSW Heritage Division of the Department of Environment and Heritage guidelines titled "Photographic Recording of Heritage Items using Film or Digital Capture". The photographic should be prepared by a heritage consultant and must document significant heritage elements and items that will be impacted by the proposed works. The record should also document significant views and vistas as selected by the heritage consultant. This archival recording should include the following items as a minimum:</p> <ul style="list-style-type: none"> • Medlow Bath Railway Station Group (SHR No.01190, TfNSW Section 170 SHI No. 4801011, Blue Mountains LEP 2015 Item No. MB003) • Hydro Majestic (Item No. MB002) • Former Post and Telegraph Store (Item No. MB008) • Avenue of Trees (Item No. MB015) • Urunga (Item No. MB017) • Melbourne House, Cosy Cot, Sheleagh Cottage (Item No. MB019) • Medlow Bath Hydro Majestic original walking track complex (only the parts within the grounds of the Hydro Majestic) (Blue Mountains LEP 2015 Item No. MB026) • Bus Shelter (potential heritage item) • Sandstone Railway culvert (potential heritage item) • Advertising sign (potential heritage item). 	Contractor	Pre-construction, Operation	Appendix J SoHI recommendation 9

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
HER11	Heritage interpretation	<p>A heritage interpretation plan will be formulated and implemented in accordance with the Heritage NSW, <i>Interpreting Heritage Places and Items</i> (Heritage Office (former) 2005) as part of the proposed upgrade of the Great Western Highway. This is to be undertaken with the consent and co-operation of authorised owners or land managers and Blue Mountains City Council.</p> <p>Heritage interpretation should communicate the history of Medlow Bath, with reference to its identified heritage items, and enable audiences to engage with the significance of these places and the wider Blue Mountains area. It should be integrated into the broader cultural heritage design and heritage interpretation strategy for the overall Great Western Highway Katoomba to Lithgow Upgrade Program, and pick up themes relevant to the overall Great Western Highway route as well as Medlow Bath.</p>	Contractor	Construction	Appendix J SoHI recommendation 10
HER12	Non-Aboriginal heritage	In the event that unexpected archaeological resources are identified in the course of the proposal, all work in the affected area should cease, the area should be cordoned off, and Heritage NSW should be notified, in accordance with Section 146 of the <i>Heritage Act 1977</i> . The TfNSW (2016) <i>Unexpected Heritage Finds Guideline</i> should be adhered to.	Contractor	Construction	Appendix J SoHI recommendation 11
HER13	Non-Aboriginal heritage	If the proposed works, or proposal area, are modified to those discussed in this report, additional heritage advice may be required to appropriately manage and mitigate any potential impacts caused by these changes.	Contractor, TfNSW	Pre-construction, construction	Appendix J SoHI recommendation 12
LAN1	Proposal Design	<p>The following principles are to continue to be incorporated into the overall design of the proposal:</p> <ul style="list-style-type: none"> the motorists experience and attract people to town centre through the feature planting characteristic of the Blue Mountains area screening of rail infrastructure where possible, using shrubs and trees, both native and exotic depending on the location rounding of cut and fill batters to help integrate into the existing landform and create a more naturalised appearance exploration of opportunities to reduce the Proposal footprint and need for temporary and ancillary sites to reduce impacts on surrounding landscape areas Consolidating barriers and fences to increase visual access and pedestrian permeability in civic spaces selection of lighting, signage and bus stops to compliment the Great Western Highway character retention of views to existing non-aboriginal heritage items identified in the contextual analysis 	TfNSW	Detailed design	Appendix K, UD, LC and VIA mitigation measures (Chapter 12)
LAN2	Bridge Design	<p>The following principles are to continue to be incorporated into the design of the bridge:</p> <ul style="list-style-type: none"> The simplification of the bridge forecourts to enhance sightlines and access and enable equitable access for all users, The refinement of the pedestrian bridge design to reduce its visual impact, by increasing the visual permeability, the positioning of the bridge to reduce the required 	TfNSW	Detailed design	Appendix K, UD, LC and VIA mitigation measures (Chapter 12)

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<p>height and the visual elongation of the bridge through the design of the bridge truss bays that extend beyond the lift structures,</p> <ul style="list-style-type: none"> • Maximising of opportunities to increase public amenity within the bridge forecourt and between proposed bus shelter/bus stops to enhance the public domain. 			
LAN3	Accessibility	The design is to continue to provide improvements to cyclist and pedestrian access through new and upgraded, footpaths and shared paths to create a complete network around Medlow Bath Station, connecting into the existing network along the Great Western Highway between Katoomba and Leura.	TfNSW	Detailed design	Appendix K, UD, LC and VIA mitigation measures (Chapter 12)
LAN4	Finishes of Structures	The design of new retaining walls to have finishes of a high standard and quality, that is in keeping with the Great Western Highway character	TfNSW	Detailed design	Appendix K, UD, LC and VIA mitigation measures (Chapter 12)
LAN5	Landscaping	<p>The following principles are to continue to be incorporated into the design of landscaping:</p> <ul style="list-style-type: none"> • Planting strategies that respond to the existing historical and local context of Medlow Bath, • The planting of feature trees at the entry into Medlow Bath village, and to highlight access into Medlow Bath Station and proposed bus shelters, • The introduction of buffer planting in front of the retaining wall at the southern entry into Medlow Bath to minimise visual impacts, • Maximising of new tree planting where possible; within medians turning facilities, and verges to reduce the scale of the proposal over time as the tree plantings mature. Consideration has been given to sight lines for motorists when identifying possible locations, • Utilisation of native and endemic plantings along the highway outside of the village to consider pedestrians and cyclists using the existing trails as links to regional routes, • Maximisation of revegetation with appropriate species along the highway to reduce perceived corridor width. 	TfNSW	Detailed design	Appendix K, UD, LC and VIA mitigation measures (Chapter 12)
LAN6	Design Integration	<p>The following measures are to be adopted during the Detailed Design stage:</p> <ul style="list-style-type: none"> • All reasonable measures taken to minimise the loss of existing vegetation along the proposal corridor. Those measures will include minimise clearing of trees for construction access, rationalisation of maintenance access, • Investigate the borrowed landscape and opportunities for additional tree plantings along the proposal corridor, • Investigate opportunities to incorporate heritage qualities within the bridge design, • Further opportunities investigated to increase landscape zones within the road corridor, 	TfNSW / Contractor	Detailed design / Construction	Appendix K, UD, LC and VIA mitigation measures (Chapter 12)

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> Lighting and signage to be well-considered in its placement and should not detrimentally add to the visual impact, At locations where greater visual impacts have been identified, the specification and planting of more mature sized shrubs and trees would be adopted to help reduce the visual impact upon opening of the road since the proposed planting would take a number of years (approximately between 3 to 10 years) to establish at adequate height, Where site compounds are needed rehabilitate to previous state. 			
SOC1	Property	A Property Acquisition Plan will be prepared and implemented in accordance with the requirements of the <i>Property Acquisition (Just Terms Compensation) Act 1991</i> .	TfNSW	Pre-construction	Standard safeguard
SOC2	Community	<p>A Communications Plan will be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The plan will include (as a minimum):</p> <ul style="list-style-type: none"> identification of key stakeholders such as the Hydro Majestic Hotel, private residences and business, Blue Mountains City Council mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions contact name and number for complaints the plan will be prepared in accordance with the <i>Community Involvement and Communications Resource Manual</i> (Roads and Traffic Authority, 2008). 	Contractor	Detailed design / Pre-construction	Standard safeguard
SOC3	Construction	Access to private residential properties, businesses and the Hydro Majestic Hotel would be maintained throughout the construction period.	Contractor	Construction	Appendix L
CUM1	Cumulative construction impacts	<p>Other developers will be consulted:</p> <ul style="list-style-type: none"> to obtain information about project timeframes and impacts. Identify and implement appropriate safeguards and management measures to minimise cumulative impacts to manage the interfaces of the proposal's staging and programming in combination with the other projects occurring in the area. 	TfNSW / Contractor	Pre-construction	REF Section 5.2
CUM2	Cumulative construction impacts	All environmental management plans (including but not limited to the Traffic Management Plan and Noise and Vibration Management Plan) will be prepared to consider other developments in the area.	Contractor	Pre-construction	REF Section 6.1.4, REF Section 6.5.4, REF Section 6.6.4,

7.3 Licensing and approvals

Table 7-2: Summary of licensing and approvals required

Instrument	Requirement	Timing
<i>Heritage Act 1977</i> (s60)	Permit to carry out activities to an item listed on the State Heritage Register (ie Medlow Bath Railway Station) or to which an interim heritage order applies from the Heritage Council of NSW.	Prior to start of the activity
<i>Protection of the Environment Operations Act 1997</i> (s43)	Environment protection licence for scheduled activities, including road construction and excavation activities, from the EPA.	Prior to start of the activity
<i>Roads Act 1993</i> (s138)	Road occupancy licence from Transport Management Centre and Blue Mountains City Council for work on TfNSW and council operated roads.	Prior to the start of the activity