

## Secretary's Environmental Assessment Requirements

<b>Application Number</b>	SSI-22004371
<b>Proposal</b>	Great Western Highway - Blackheath to Little Hartley
<b>Location</b>	Great Western Highway between Blackheath and Little Hartley
<b>Proponent</b>	Transport for NSW
<b>Date of Issue</b>	27 August 2021
<b>Date of Expiration</b>	27 August 2023

## 1. General SEARs

Desired Performance Outcome	Requirement	Guidelines
<p><b>1. Environmental Impact Assessment Process</b></p> <p>The process for assessment of the proposal is transparent, balanced, well focussed and legal.</p>	<ol style="list-style-type: none"> <li>1. The Environmental Impact Statement must be prepared in accordance with Part 3 of Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i> (the EP&amp;A Regulation).</li> <li>2. The EIS must be prepared having regard to the Department's <i>State Significant Infrastructure Guidelines</i> and other State Significant Project Guidelines, as relevant.</li> <li>3. It is the Proponent's responsibility to determine whether the project needs to be referred to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) for an approval under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act). If DAWE has determined that an approval is required under the EPBC Act, supplementary environmental assessment requirements may need to be issued to ensure a streamlined assessment under the Bilateral Agreement can be achieved.</li> <li>4. Where the project requires approval under the EPBC Act and is being assessed under the Bilateral Agreement (pursuant to Amending Agreement No. 1), the EIS must include: <ol style="list-style-type: none"> <li>(a) consideration of any Protected Matters that may be impacted by the development where the Commonwealth Minister has determined that the proposal is a Controlled Action;</li> <li>(b) identification and assessment of those Protected Matters that are likely to be significantly impacted;</li> <li>(c) details of how significant impacts to Protected Matters have been avoided, mitigated and, if necessary, offset; and</li> <li>(d) consideration of, and reference to, any relevant conservation advices, recovery plans and threat abatement plans.</li> </ol> </li> <li>5. The onus is on the Proponent to ensure legislative requirements relevant to the project are met.</li> </ol>	<p>State significant infrastructure guidelines – preparing an environmental impact statement, Appendix B to the State significant infrastructure guidelines (DPIE, 2021)</p>
<p><b>2. Environmental Impact Statement</b></p> <p>The project is described in sufficient detail to enable clear understanding that the project has been developed through</p>	<ol style="list-style-type: none"> <li>1. The EIS must include, but not necessarily be limited to, the following: <ol style="list-style-type: none"> <li>(a) a <b>summary</b> of the project as a whole that has regards to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development;</li> <li>(b) an <b>introduction</b>;</li> </ol> </li> </ol>	<p>State significant infrastructure guidelines – preparing an environmental impact statement, Appendix</p>

Desired Performance Outcome		
<p>an iterative process of impact identification and assessment and project refinement to avoid, minimise or offset impacts so that the project, on balance, has the least adverse environmental, social and economic impact, including its cumulative impacts.</p>	<p>(c) the <b>strategic and project context</b> including but not limited to –</p> <ul style="list-style-type: none"> <li>- relevant Government strategies, policies or plans which provide strategic support for the project,</li> <li>- regional and local land use planning context,</li> <li>- key features of the project corridor including land uses, land ownership, important features in the natural and built environment,</li> <li>- an analysis of any feasible alternatives to the project and options within the project, including - <ul style="list-style-type: none"> <li>o details of the short-listed route and tunnel options considered, and the criteria that was considered in the selection of the preferred route and tunnel design,</li> <li>o the alternative tunnel design (including consideration of different tunnel excavation methods to minimise groundwater interception and drawdown impacts and inflows of naturally occurring gas) and ventilation options considered to meet the air quality criteria for the proposal, and</li> <li>o a concise description of different construction methods including their environmental benefits, that were analysed and preferred methods;</li> </ul> </li> </ul> <p>(d) a <b>project description</b>, including but not limited to -</p> <ul style="list-style-type: none"> <li>- project area,</li> <li>- physical layout and design, including an overview of the project in a table that captures the main elements of the project and all construction and operational mitigation measures,</li> <li>- uses and activities, including a description of any related development or infrastructure that is required for the project or may be developed as a result of the project, but would be subject to a separate approval process,</li> <li>- timing and sequencing;</li> </ul> <p>(e) the <b>statutory context</b> of the project;</p> <p>(f) the <b>community and agency engagement</b> undertaken and to be undertaken for the project;</p> <p>(g) the <b>project justification and evaluation</b> having regard to -</p> <ul style="list-style-type: none"> <li>- the design of the project and what action has been taken to avoid or minimise the impacts of the project (e.g. objectives of the project, alternatives considered, project area, physical layout and design, uses and activities, timing, proposed mitigation measures),</li> <li>- the consistency of the project with the strategic context (e.g. supported by Government policy, consistent with regional plans, avoids impacts on key natural and built features with significant conservation value, provides economic benefits to regional community, the corridor is suitable for the project),</li> <li>- compliance with any relevant statutory requirements,</li> </ul>	<p>B to the State significant infrastructure guidelines (DPIE, 2021)</p> <p>Undertaking Engagement Guidelines for State Significant Projects (DPIE, 2021)</p>

Desired Performance Outcome	Requirement	
	<ul style="list-style-type: none"> <li>- community views about the project and how they have been addressed in the design of the project or the assessment of the impacts of the project,</li> <li>- the scale and nature of the economic, social and environmental impacts of the project, including any cumulative impacts, and</li> <li>- any key uncertainties associated with the impact assessment and actions proposed to address these.</li> </ul>	
<p><b>3. Detailed assessment and mitigation of key impacts</b></p> <p>Impacts are assessed objectively and thoroughly to provide confidence that the project will be constructed and operated within acceptable levels of impact or with appropriate offsets.</p> <p>Key impact issues are nominated by the Proponent in the SSI project application and by the Department in the SEARs. Key issues need to be reviewed throughout the preparation of the EIS to ensure any new key issues that emerge are captured. The key issues identified in this document are not exhaustive but are key issues common to most SSI projects.</p>	<ol style="list-style-type: none"> <li>1. The level of assessment of likely impacts must be proportionate to the significance of, or degree of impact on, the issue, within the context of the proposal location and the surrounding environment. The level of assessment must be commensurate to the degree of impact and sufficient to ensure that the Department and other government agencies are able to understand and assess impacts.</li> <li>2. For each key issue, the EIS must include a summary of the results of the assessment of the potential impacts of the project undertaken in detailed studies, including: <ol style="list-style-type: none"> <li>(a) a summary of the condition of the existing environment;</li> <li>(b) a summary of the key findings of the detailed technical studies in the appendices of the EIS, using suitable cross-referencing to reduce repetition between the two parts of the EIS;</li> <li>(c) description of the scale and nature of the predicted impacts, including any cumulative impacts, and whether these impacts will comply with the relevant statutory requirements, standards or performance measures;</li> <li>(d) demonstrated ability to avoid, mitigate or offset the impacts of the project having regards to - <ul style="list-style-type: none"> <li>- mitigation measures incorporated into the design of the project (e.g. changes to the project area, project layout and design, key uses and activities carried out on site, timing),</li> <li>- other mitigation measures that will be implemented, and</li> <li>- any negotiated agreements or offsets proposed to address residual impacts of the project following mitigation;</li> </ul> </li> <li>(e) detailed reasons justifying any predicted exceedances of relevant standards or performance measures;</li> <li>(f) identification of key uncertainties associated with the assessment and what action will be taken to address these uncertainties; and</li> <li>(g) highlight any key linkages between the assessment of different matters or likely cumulative impacts of the project.</li> </ol> </li> </ol>	<p>State significant infrastructure guidelines – preparing an environmental impact statement, Appendix B to the State significant infrastructure guidelines (DPIE, 2021)</p> <p>Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2021)</p>

Desired Performance Outcome	Requirement	Guidelines
<b>4. Key Appendices</b>	<p>1. The EIS must include the following appendices:</p> <ul style="list-style-type: none"> <li>(a) a SEARs table, identifying the sections and subsections where the SEARs have been addressed in the EIS and in the specialist assessment reports;</li> <li>(b) a statutory compliance table, identifying where the relevant statutory requirements have been addressed in the EIS;</li> <li>(c) a community engagement table, identifying where the issues raised by the community during engagement have been addressed in the EIS;</li> <li>(d) a table of the proposed mitigation measures for the project (excluding any mitigation measures that are built into the physical layout and design of the project and captured in the project description); and</li> <li>(e) any supporting information, including any detailed technical reports prepared by specialists.</li> </ul>	

## 2. Key Issue SEARs

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
<p><b>1. Air Quality</b></p> <p>The project is designed, constructed and operated in a manner that minimises air quality impacts (including nuisance dust and odour) to minimise risks to human health and the environment to the greatest extent practicable.</p>	<p>1. An air quality impact assessment (AQIA) for construction and operation of the project in accordance with the current guidelines.</p> <p>2. The AQIA must include the following:</p> <ul style="list-style-type: none"> <li>(a) a demonstrated ability to comply with the relevant regulatory framework, specifically the <i>Protection of the Environment Operations Act 1997</i> and the <i>Protection of the Environment Operations (Clean Air) Regulation (2010)</i>;</li> <li>(b) the identification of all potential sources of air pollution including details of the location, configuration and design of all potential emission sources including ventilation systems and tunnel portals;</li> <li>(c) a review of vehicle emission trends and an assessment that uses or</li> </ul>	<p>Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA, 2016)</p> <p>Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC, 2007)</p> <p>Technical Framework - Assessment and Management of Odour from Stationary Sources in NSW (DEC, 2006)</p> <p>In-Tunnel Air Quality (Nitrogen Dioxide) Policy (Advisory Committee on Tunnel Air Quality, 2016)</p>

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	<p>sources best available information on vehicle emission factors;</p> <p>(d) an assessment of impacts (including human health impacts) from potential emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>2</sub> and other nitrogen oxides and volatile organic compounds (e.g. BTEX) including consideration of short- and long-term exposure periods;</p> <p>(e) consideration of the impacts from the dispersal of these air pollutants on the ambient air quality (based on at least 12 months of recent local ambient air quality monitoring data) along the proposal route, proposed ventilation outlets and portals, surface roads, ramps and interchanges and the alternative surface road network, including consideration of short- and long-term exposure periods;</p> <p>(f) a qualitative assessment of the redistribution of ambient air quality impacts compared with existing conditions, due to the predicted changes in traffic volumes;</p> <p>(g) assessment of worst-case scenarios for in-tunnel and ambient air quality, including a range of potential ventilation scenarios and range of traffic scenarios, including worst-case design maximum traffic flow scenario (variable speed) and worst-case breakdown scenario, and discussion of the likely occurrence of each;</p> <p>(h) details of the proposed tunnel design and mitigation measures to address in-tunnel air quality and the air quality in the vicinity of portals and any mechanical ventilation systems (i.e. ventilation outlets and air inlets) including details of proposed air quality monitoring (including frequency and criteria);</p> <p>(i) consideration of the Tunnel Ventilation and Filtration Fact Sheet (RMS Feb 2018), and should portal emissions be proposed, demonstration that such a design is supported by NSW intergovernmental review and is assessed in accordance with air quality impact assessment criteria and methodology endorsed by the Advisory Committee on Tunnel Air Quality;</p> <p>(j) a demonstration of how the project and ventilation design ensures</p>	

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	<p>that concentrations of air emissions meet NSW, national and international best practice for in-tunnel and ambient air quality, and the In-Tunnel Air Quality (Nitrogen Dioxide) Policy;</p> <p>(k) details of any emergency ventilation systems, such as air intake/exhaust outlets, including protocols for the operation of these systems in emergency situations, potential emission of air pollutants and their dispersal, and safety procedures;</p> <p>(l) details of in-tunnel air quality control measures considered, including air filtration, and justification of the proposed measures or for the exclusion of other measures; and</p> <p>(m) a description and assessment of the impacts of potential emissions sources relating to construction, including details of the proposed mitigation measures to prevent the generation and emission of dust (particulate matter and total suspended particles) and air pollutants (including odours) during the construction of the proposal, particularly in relation to ancillary facilities (such as concrete batching plants), tunnel spoil handling and storage, the use of mobile plant, stockpiles and the processing and movement of spoil.</p>	
<p><b>2. Biodiversity</b></p> <p>The project design considers all feasible measures to avoid and minimise impacts on terrestrial and aquatic biodiversity.</p> <p>The offsets and/or biodiversity conservation actions are assured and are equivalent to any residual impacts of project construction and operation.</p>	<ol style="list-style-type: none"> <li>1. Prepare a <b>Biodiversity Development Assessment Report (BDAR)</b> that assesses biodiversity impacts in accordance with s7.9 of the <i>Biodiversity Conservation Act 2016</i> (BC Act) and the Biodiversity Assessment Method (BAM).</li> <li>2. The BDAR must document the application of the avoid, minimise and offset framework in accordance with the BAM.</li> <li>3. The BDAR must include information in the form detailed in s6.12 of the BC Act, cl6.8 of the <i>Biodiversity Conservation Regulation 2017</i> and the BAM including details of the measures proposed to address the offset obligation as follows: <ul style="list-style-type: none"> <li>(a) the total number and classes of biodiversity credits required to be</li> </ul> </li> </ol>	<p>Biodiversity Assessment Method (OEH, 2020)</p> <p><a href="#">Policy and Guidelines for Fish Habitat Conservation and Management – Update 2013</a> (DPI, 2013)</p> <p><a href="#">Threatened Species Survey and Assessment Guidelines</a></p> <p><a href="#">Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (NSW Fisheries, 2003)</a></p> <p>Aquatic Ecology in Environmental Impact Assessment – EIA Guideline (Marcus Lincoln Smith, 2003)</p> <p>Freshwater threatened species distribution maps</p>

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	<p>retired for the developments/project;</p> <p>(b) the number of classes of like-for-like biodiversity credits proposed to be retired;</p> <p>(c) the number and classes of biodiversity credits proposed to be retired in accordance with the variation rules;</p> <p>(d) any proposal to fund a biodiversity conservation action; and</p> <p>(e) any proposal to make a payment to the Biodiversity Conservation Fund; and</p> <p>(f) any staged retirement of credits based on when the development is carried out that would impact on biodiversity values.</p> <p><i><b>Note:</b> If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits.</i></p> <p>4. The BDAR must be submitted with all digital spatial data associated with the survey and assessment as per the BAM.</p> <p>5. The BDAR must be prepared by a person accredited in accordance with the <i>Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017</i> under s6.10 of the BC Act.</p> <p>6. The BDAR must include details of the measures proposed to address offset obligations.</p> <p>7. Impacts on <b>biodiversity values not covered by the BAM</b> must be assessed. This includes a threatened aquatic species assessment (Part 7A <i>Fisheries Management Act 1994</i>) to address whether there are likely to be any significant impact on listed threatened species, populations or ecological communities listed under the <i>Fisheries Management Act 1994</i> (FM Act).</p> <p>8. Identify whether the project , or any component of the project, would be classified as a <b>Key Threatening Process (KTP)</b> in accordance with the listings in the BC Act, FM Act and the <i>Environmental Protection</i> and the</p>	<p><a href="http://www.dpi.nsw.gov.au/fishing/species-protection/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps">www.dpi.nsw.gov.au/fishing/species-protection/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps</a></p>



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	<i>Biodiversity Conservation Act 2000 (EPBC Act).</i>	
<b>3. Business, Land Use and Property</b> The project minimises adverse impacts to property and business and achieves appropriate integration with adjoining land uses, including maintenance of appropriate access to properties and community facilities, and minimisation of displacement of existing land use activities, dwellings and infrastructure. The project maximises positive impact opportunities.	1. The <b>impacts</b> of construction and operation on potentially affected properties (including property acquisitions/adjustments), businesses bypassed by the project, recreational users, land and water users, and utility infrastructure, access, amenity and relevant statutory rights, must be assessed.	
<b>4. Climate Change Risk</b> The project is designed, constructed and operated to be resilient to the future impacts of climate change.	1. The risk and vulnerability of the project to <b>climate change</b> in accordance with the current guidelines. 2. Climate change risks must be quantified with reference to the NSW Government's climate projections at 10 km resolution (or lesser resolution if 10 km projections are not available) or equivalent projection tool (such as the Climate Futures Tool from CSIRO and BoM (attenuated for project region)) and specific adaptation actions incorporated in the design.	Australian Government's Climate Change Impacts and Risk Management – A Guide for Business and Government (2006) AS/NZS 3100:2009 Risk Management – Principles and Guidelines
<b>5. Design, Place and Movement</b> The project is well designed and enhances the environment where it is located, including improved accessibility and connectivity for communities and public spaces. The project helps to support the health and wellbeing of Country by valuing, respecting,	1. A <b>design led process</b> that is informed, collaborative and iterative, which: <ul style="list-style-type: none"> <li>(a) utilises good design processes (such as Design Excellence and Design Review);</li> <li>(b) utilises design experts and multidisciplinary teams;</li> <li>(c) is designed with and connected with Country;</li> <li>(d) demonstrates how design integrity will be maintained in subsequent stages of the assessment process; and</li> <li>(e) involves the community, user groups and other stakeholders.</li> </ul>	<a href="#">Better Placed – An integrated design policy for built environment of New South Wales (Government Architect NSW, 2017)</a> <a href="#">Designing with Country (Government Architect NSW, 2020)</a> <a href="#">Connecting with Country (Government Architect NSW, 2020)</a>

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<p>and being guided by Aboriginal people.</p> <p>The project contributes to greener places through the enhancement and provision of green infrastructure.</p>	<ol style="list-style-type: none"> <li>Identify <b>place principles</b> that are reflective of the design objectives in Better Placed.</li> <li>Include and illustrate <b>place designs, outcomes and actions</b> for the project that protect and facilitate improvements to the built environment and place, including in relation to: <ol style="list-style-type: none"> <li>built form (including key project elements and amenity impacts on the surrounding environment);</li> <li>public space (including public open space, how that space has been maximised and protected, and access to and the quality of the space);</li> <li>residual land (where it is known that this will be returned as public open space and the reallocation of space, such as main streets where traffic has been reduced as a result of the project); and</li> <li>views and vistas (including an assessment of visual impact, and visual representations of the project from key locations to illustrate the project where visual impacts that are deemed greater than medium).</li> </ol> <p>This should also address maintenance of infrastructure, place, landscaping and residual land.</p> </li> <li>Identify <b>Movement (accessibility and connectivity) principles, outcomes and actions</b> for the project that facilitate improvements to movement, including in relation to: <ol style="list-style-type: none"> <li>how the project considers the relationship between movement and place;</li> <li>how the project contributes to more walking, cycling and public transport use, including along the existing Greater Western Highway corridor;</li> <li>how any walking, cycling or public transport provided by the project integrates with wider active and public transport network and access</li> </ol> </li> </ol>	<p><a href="#">Aligning Movement and Place – Outline for understanding places in relation to movement infrastructure (Government Architect of NSW, 2019)</a></p> <p><a href="#">Practitioner's Guide to Movement and Place (NSW Government, 2020)</a></p> <p><a href="#">Healthy Urban Development Checklist (NSW Health, 2009)</a>, section 10</p> <p><a href="#">Creating Walkable Neighbourhoods</a> (Active Living NSW, 2018)</p> <p><a href="#">Sydney Green Grid – Spatial Framework and Project Opportunities (Tyrrell Studio and Office of the Government Architect, 2017)</a></p> <p><a href="#">Greener Places – Establishing an urban Green Infrastructure policy for New South Wales (NSW Government, 2020)</a></p> <p>AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting</p> <p>AS4970-2009 Protection of trees on development sites</p>

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	<p>to public space (including Evans Lookout); and</p> <p>The EIS must demonstrate changes to:</p> <ul style="list-style-type: none"> <li>(d) access to public space;</li> <li>(e) access to community facilities or areas providing services to the community, such as local centres; and</li> <li>(f) active and public transport.</li> </ul> <p>5. Identify <b>green infrastructure design principles</b> that are reflective of the principles in Greener Placed and The Sydney Green Grid.</p> <p>6. Include and illustrate <b>green infrastructure designs, actions and outcomes</b> for the project including in relation to:</p> <ul style="list-style-type: none"> <li>(a) green infrastructure, including enhancement of open space that supports recreation, biodiversity and waterway health; and</li> <li>(b) how the project will achieve a net increase in tree numbers and canopy within proximity of the impacted area. (This relates to the number of trees to be cleared by the project (a tree is defined by Australian Standard 4970) that will not be covered by a biodiversity offset strategy).</li> </ul>	
<p><b>6. Flooding</b></p> <p>The project minimises adverse impacts on existing flooding characteristics.</p> <p>Construction and operation of the project avoids or minimises the risk of, and adverse impacts from, infrastructure flooding, flooding hazards, or dam failure.</p>	<p>1. Changes to <b>flood behaviour</b> during construction and operation for a full range of flood events up to the probable maximum flood (taking into account storm intensity due to climate change) must be assessed (and modelled where required) including:</p> <ul style="list-style-type: none"> <li>(a) any detrimental increases in the potential flood affectation of other properties, developments, assets and infrastructure;</li> <li>(b) consistency (or inconsistency) with applicable local government council floodplain risk management plans and any rural floodplain management plans;</li> <li>(c) compatibility with the flood hazard of the land;</li> <li>(d) compatibility with the hydraulic functions of flow conveyance in</li> </ul>	<p>NSW Government's Floodplain Development Manual (Department of Natural Resources, 2005)</p> <p><a href="#">PS 07-003 New guideline and changes to section 117 direction and EP&amp;A Regulation on flood prone land</a></p> <p><a href="#">Practical Consideration of Climate Change - Flood risk management guideline (DECC, 2007)</a></p> <p>Australian Rainfall and Runoff – A Guide to Flood Estimation (Commonwealth of Australia (Geoscience Australia), 2019)</p>

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	<p>flood ways and storage areas of the land;</p> <p>(e) downstream velocity and scour potential;</p> <p>(f) how the tunnel entries would be protected from flooding during construction;</p> <p>(g) existing and proposed emergency management, evacuation and access and contingency measures and impacts the development may have upon existing community emergency management arrangements for flooding. These matters must be discussed with the State Emergency Services and Council(s);</p> <p>(h) any impacts the development may have on the social and economic costs to the community as consequence of flooding; and</p> <p>(i) measures required to mitigate, manage and/or offset potential flood risks attributable to the project.</p> <p>2. The assessment must take into consideration any flood studies undertaken by the relevant local government councils, where available.</p> <p>3. The assessment must include maps of all features relevant to flooding as described in the <i>Floodplain Development</i> including flood prone land and the flood planning area.</p> <p><b>4. Flood management objectives and outcomes</b> must be clearly identified and substantiated to address the characteristics of the environment and relevant legislative, management and guidance requirements.</p> <p><i>Note: The 0.55 and 0.2% AEP year flood events are to be used as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.</i></p>	
<p><b>7. Health and Safety</b></p> <p>The project avoids or minimises any adverse health impacts arising from the project.</p> <p>The project avoids, to the greatest extent</p>	<p>1. The potential <b>health risks</b> from the construction and operation of the project. The assessment must:</p> <p>(a) describe the current known health status of the potentially affected population;</p>	<p>Environmental Health Risk Assessment, Guidelines for assessing human health risks from environmental hazards, Commonwealth of Australia (enHealth, 2012)</p> <p>Environmental Health Risk Assessment, Guidelines for</p>

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possible, risk to public safety.	<ul style="list-style-type: none"> <li>(b) describe how the design of the proposal minimises adverse health impacts and maximises health benefits;</li> <li>(c) assess human health risks from the operation and use of the tunnel under a range of conditions, including worst case operating conditions;</li> <li>(d) human health risks and costs associated with the construction and operation of the proposal, including those associated with air quality, odours, noise and vibration (including residual noise following application of mitigation measures), construction fatigue, and social impacts (including from acquisitions) on the adjacent and surrounding areas as well as opportunity costs (such as those from social infrastructure and active transport impacts) during the construction and operation of the proposal;</li> <li>(e) include both incremental changes in exposure from existing background pollutant levels and the cumulative impacts of project specific and existing pollutant levels at the location of the most exposed receivers and other sensitive receptors (including public open space areas child care centres, schools, hospitals and aged care facilities);</li> <li>(f) assess the opportunities for health improvement; and</li> <li>(g) assess the distribution of the health risks and benefits.</li> </ul> <p>2. The Proponent must assess the likely risks of the construction and operation of the project on <b>public safety</b>, paying particular attention to pedestrian and cyclist safety, subsidence risks, extreme weather events, bushfire risks and the handling and use of dangerous goods.</p>	<p>assessing human health risks from environmental hazards, Commonwealth of Australia (enHealth, 2012)</p> <p>Air Quality in and Around Traffic Tunnels (NHMRC, 2008)</p> <p><a href="#">Methodology for Valuing the Health Impacts of Changes in Particle Emissions (EPA, 2013)</a></p> <p><a href="#">Health Impact Assessment: A practical guide</a> (NSW Health, 2007)</p> <p>Health Impact Assessment Guidelines, Commonwealth Department of Health and Aged Care (enHealth, 2001)</p> <p>SEPP No. 33 - Hazardous and Offensive Development</p>
<p><b>8. Heritage – Aboriginal Cultural Heritage</b></p> <p>The design, construction and operation of the project facilitates, to the greatest extent possible, the long term protection,</p>	<p>1. The direct and/or indirect impacts (including cumulative impacts and visual impacts) to the heritage significance of:</p> <p><b>(a) Aboriginal places, objects and cultural heritage values</b> (including landscapes of cultural value), as defined under the National Parks</p>	<p>Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011)</p> <p>Aboriginal Cultural Heritage Consultation requirements for proponents (DECCW, 2010)</p>

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<p>conservation and management of the heritage significance of Aboriginal objects and places.</p> <p>The design, construction and operation of the project avoids or minimises impacts, to the greatest extent possible, on the heritage significance of Aboriginal objects and places.</p>	<p>and Wildlife Act 1974 and in accordance with the principles and methods of assessment identified in the current guidelines; and</p> <p>(b) Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan.</p> <p>2. The assessment must:</p> <p>(a) identify the potential for unknown Aboriginal cultural heritage in the form of submerged terrestrial sites;</p> <p>(b) provide a discussion of alternative locations and design options that have been considered to reduce impacts to Aboriginal places, objects and cultural heritage values; and</p> <p>(c) describe the management measures to avoid and minimise impacts to Aboriginal places, objects and cultural heritage values.</p> <p>3. Where archaeological investigations of Aboriginal objects are proposed these must be conducted by a suitably qualified archaeologist, meeting the minimum qualification requirements specified in section 1.6 of the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010).</p> <p>4. Identify and describe the Aboriginal cultural heritage values that exist across the whole area that would be affected by the development and document these in an Aboriginal Cultural Heritage Assessment Report (ACHAR). The assessment of Aboriginal cultural heritage values must include a surface survey and the results of the survey used to inform the need for test excavation. Results of the surface surveys and test excavations must be documented in the ACHAR. The identification of cultural heritage values must be conducted in accordance with the <i>Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW</i> (DECCW, 2010), and guided by the <i>Guide to Investigating, Assessing and</i></p>	<p>Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010)</p> <p>NSW Skeletal Remains: Guidelines for Management of Human Remains (Heritage Office, 1998)</p> <p><a href="#">Aboriginal site recording form</a></p> <p><a href="#">Aboriginal site impact recording form</a></p> <p><a href="#">Aboriginal Heritage Information Management System site registration form</a></p> <p><a href="#">Care agreement application form</a></p> <p><a href="#">Criteria for assessing Excavation Directors (NSW Heritage Council, 2019)</a></p> <p>NSW Heritage Manual (Heritage Office and Department of Urban Affairs and Planning, 1994)</p> <p>Assessing Heritage Significance (NSW Heritage Office, 2001)</p> <p>The Australia ICOMOS Burra Charter 2013</p> <p>Assessing Significance for Historical Archaeological Sites and 'Relics' (Heritage Branch, Department of Planning, 2009)</p> <p>Archaeological Assessment (Heritage Office and Department of Urban Affairs and Planning, 1996)</p>

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	<p><i>Reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011).</i></p> <ol style="list-style-type: none"> <li>Consultation with Aboriginal people must be undertaken and documented in accordance with the <i>Aboriginal cultural heritage consultation requirements for proponents</i> (DECCW, 2010). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.</li> <li>Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to Heritage NSW.</li> <li>The ACHAR must outline the procedures to be followed if Aboriginal objects or Aboriginal burials or skeletal material are found.</li> </ol> <p><b>Note:</b> <i>that due diligence is not an appropriate assessment, and an ACHAR is required.</i></p>	
<p><b>9. Heritage – non-Aboriginal</b></p> <p>The design, construction and operation of the project facilitates, to the greatest extent possible, the long term protection, conservation and management of the heritage significance of items of environmental heritage value.</p> <p>The design, construction and operation of the project avoids or minimises impacts, to the greatest extent possible, on the heritage</p>	<ol style="list-style-type: none"> <li>Identify and assess the direct and/or indirect impacts to the significance of: <ol style="list-style-type: none"> <li><b>environmental heritage</b>, as defined under the <i>Heritage Act 1977</i> (including potential items of heritage value, conservation areas, open space heritage landscapes, built heritage landscapes and archaeology);</li> <li>items listed on the State, National and World Heritage lists; and</li> <li>heritage items and conservation areas identified in local and regional planning environmental instruments covering the project area.</li> </ol> </li> </ol>	<p>NSW Skeletal Remains: Guidelines for Management of Human Remains (Heritage Office, 1998)</p> <p>Care agreement application form Criteria for the assessment of excavation directors (NSW Heritage Council, 2011)</p> <p>NSW Heritage Manual (Heritage Office and Department</p> <p>German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures</p> <p>Assessing vibration: a technical guideline (DEC, 2006)</p>

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significance of environmental heritage value.	<p>2. Where impacts to National, State or locally significant heritage items are identified, the assessment must:</p> <ul style="list-style-type: none"> <li>(a) include a significance assessment, a statement of heritage impact for all heritage items and a historical archaeological assessment;</li> <li>(b) provide a discussion of alternative locations and design options that have been considered to reduce heritage impacts;</li> <li>(c) in areas identified as having potential archaeological significance, undertake a comprehensive historical archaeological assessment and management plan in line with Heritage Council guidelines which includes a methodology and research design to assess the impact of the works on the potential archaeological resource and to guide physical archaeological test excavations and include the results of these excavations. This is to be carried out by a suitably qualified archaeologist and is to discuss the likelihood of significant historical archaeology on the site, identification of any relics that are likely to be present and their significance and how these may be impacted by the project, and measures to mitigate any impacts;</li> <li>(d) consider impacts to the item of significance caused by, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, increased traffic, visual amenity, landscape and vistas, curtilage, subsidence and architectural noise treatment (as relevant);</li> <li>(e) provide a comparative analysis to inform the rarity and representative value of any heritage places proposed for demolition;</li> <li>(f) outline mitigation measures to avoid, mitigate and/or minimise impacts identified in accordance with the current guidelines; and</li> <li>(g) be undertaken by a suitably qualified heritage consultant(s) (<b>note:</b> where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria).</li> </ul>	<p>Greater Blue Mountains World Heritage Area Strategic Plan (NPWS &amp; DEWHA, 2009)</p> <p>Archaeological Assessment (Heritage Office and Department of Urban Affairs and Planning, 1996)</p> <p>Assessing Significance for Historical Archaeological Sites and 'Relics' (Heritage Branch, Department of Planning, 2009)</p>



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<p><b>10. Noise and Vibration - Amenity</b></p> <p>Construction noise and vibration (including airborne noise, ground-borne noise and blasting) are effectively managed to minimise adverse impacts on acoustic amenity, and adverse impacts on the structural integrity of buildings and items including Aboriginal places and environmental heritage.</p> <p>Increases in noise emissions and vibration affecting nearby properties and other sensitive receivers during operation of the project are effectively managed to protect the amenity and well-being of the community.</p> <p>Increases in noise emissions and vibration affecting environmental heritage as defined in the <i>Heritage Act 1977</i> during operation of the project are effectively managed.</p>	<p><b>1. Construction and operational noise and vibration impacts</b> in accordance with relevant NSW noise and vibration guidelines, including how the measures in the guidelines will be implemented and their effect on reducing the level and impact of noise and vibration.</p> <p>The assessment must take into consideration and address the redistribution of traffic (including on local feeder roads) and operational plant and equipment and take into account the characteristics of noise and vibration (for example, low frequency noise). It must consider the impacts to sensitive receivers, including the potential for sleep disturbance (in terms of noise levels and number of noise-awakening events).</p> <p><b>2. The assessment of construction noise and vibration must:</b></p> <ul style="list-style-type: none"> <li>(a) describe the nature of construction activities and related noise characteristics (including vehicle noise, tonal or impulsive noise-generating works) using typical and worst-case scenarios and highlight high noise generating activities;</li> <li>(b) detail the intensity and duration of noise (both air and ground borne) and vibration impacts. This must include consideration of high noise generating activities and extended construction impacts associated with ancillary facilities (and the like) and construction fatigue;</li> <li>(c) identify the nature and location of sensitive receivers;</li> <li>(d) describe the nature and level of the impact and the sensitivity of receivers, including for out-of-hours work;</li> <li>(e) identify factors that may influence the timing and duration of noisy and vibration generating construction activities;</li> <li>(f) identify and document the potential for works outside standard construction hours (including utility works and works associated with the proposed development including those undertaken under another assessment and approval pathway, including but not</li> </ul>	<p>Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration (ANZECC, 1990)</p> <p>Assessing Vibration: a technical guideline (DEC, 2006)</p> <p>German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures</p> <p>Interim Construction Noise Guideline (DECC, 2009)</p> <p><a href="#">Noise Policy for Industry (EPA, 2017)</a></p> <p><a href="#">NSW Road Noise Policy (DECCW, 2011)</a></p> <p>AS 2187.2 Explosives—Storage, transport and use—Use of explosives (Australian Standards, 2006)</p>

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	<p>limited to -</p> <ul style="list-style-type: none"> <li>- justification for the activity(s) in terms of the <i>Interim Construction Noise Guideline</i> (DECCW, 2009),</li> <li>- location of the activity(s),</li> <li>- predicted noise and vibration levels, and exceedances,</li> <li>- number of potentially affected receivers, and</li> <li>- timing and duration of the activity(s);</li> </ul> <p>(g) include a cumulative noise and vibration assessment inclusive of impacts from the project (including concurrent project construction activities) and the construction of other relevant development in the vicinity of the project;</p> <p>(h) assess the potential for sleep disturbance (including noise-awakening events);</p> <p>(i) provide details and analysis of the predicted effectiveness of temporary or permanent mitigation measures to adequately manage identified impacts;</p> <p>(j) describe any potential residual noise and vibration impacts following application of mitigation measures; and</p> <p>(k) include a description of how sensitive receiver feedback received during the preparation of the EIS has been taken into account (and would be taken into account post exhibition of the EIS) in the design of mitigation measures, including any tailored mitigation, management and communication strategies for sensitive receivers.</p> <p>3. The assessment of <b>construction and operational traffic noise</b> must include:</p> <ul style="list-style-type: none"> <li>(a) justification for the predictive model used in accordance with Road Noise Policy Appendix B4 and Appendix B5;</li> <li>(b) consideration of how maximum noise levels on the potential for sleep disturbance has informed the project design and mitigation measures;</li> </ul>	

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	<ul style="list-style-type: none"> <li>(c) consideration of the effects of road gradient on acceleration (tyre and engine noise), deceleration (engine braking and compression braking); and</li> <li>(d) consideration of meteorological conditions by noting any wind or temperature inversion conditions and discussing their effects on traffic noise.</li> </ul> <p>4. If <b>blasting</b> is required, demonstration that blast impacts can comply with current guidelines.</p> <p>5. The process for community engagement should be included or referenced in the noise and vibration assessment as part of the mitigation strategy and assessment.</p>	
<p><b>11. Protected and Sensitive Lands</b></p> <p>The project is designed, constructed and operated to avoid or minimise impacts on protected and sensitive lands.</p> <p>The project is designed, constructed and operated to avoid or minimise future exposure to coastal hazards and processes.</p>	<p>1. Impacts of the project on <b>environmentally sensitive land and processes</b> (and the impact of processes on the project) including, but not limited to:</p> <ul style="list-style-type: none"> <li>(a) protected areas (including land and water) managed and/or reserved under the <i>National Parks and Wildlife Act 1974</i>;</li> <li>(b) Key Fish Habitat as mapped and defined in accordance with the <i>Fisheries Management Act 1994</i> (FM Act);</li> <li>(c) waterfront land as defined in the <i>Water Management Act 2000</i>;</li> <li>(d) land or waters identified as Critical Habitat under the FM Act or EPBC Act or areas of outstanding biodiversity value under the BC Act; and</li> <li>(e) biodiversity stewardship sites, private conservation lands and other lands identified as offsets.</li> </ul> <p>2. The assessment must identify the construction and operational activity footprint in relation to <b>lands reserved or acquired under the <i>National Parks and Wildlife Act 1974</i></b> and NPWS land proposed to be revoked. Where NPWS land is to be revoked, the assessment must:</p> <ul style="list-style-type: none"> <li>(a) describe the biological, cultural and other values (such as recreational, public use and park management assets) protected by</li> </ul>	<p><a href="#">Planning Circular PS14-003: Coastal hazard notations on section 149 planning certificates</a> (DPE, 2014)</p> <p>Guidelines for controlled activities on waterfront land (DPI, 2012)</p> <p><a href="#">Developments adjacent to National Parks and Wildlife Service lands: Guidelines for consent and planning authorities</a> (NPWS, 2020)</p> <p><a href="#">NPWS Revocation, Recategorisation and Road Adjustment Policy</a> (NPWS, 2017)</p> <p>Blue Mountains National Park Fire Management Strategy (NPWS, 2004)</p>

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	<p>the reservation including those identified in the <i>Blue Mountains National Park Plan of Management</i> (NPWS, 2001) and <i>Blue Mountains National Park Amendment to Plan of Management</i> (NPWS, 2021);</p> <p>(b) an evaluation of the contribution of the affected land to biological, cultural and other values protected by the reservation and the impact of the loss of these lands from the NSW reserve system;</p> <p>(c) description of alternative options to avoid NPWS land and revocation; and</p> <p>(d) proposed compensation strategy to offset the revoked land.</p>	
<p><b>12. Social</b></p> <p>The project is designed to provide socially sustainable outcomes.</p> <p>The project will maximise the social and economic welfare of the community.</p> <p>The project will deliver better development outcomes by minimising negative social impacts and enhancing positive social impacts on affected communities.</p>	<ol style="list-style-type: none"> <li>Potential <b>social impacts of the project</b> from the points of view of the affected community/ies and other relevant stakeholders (i.e. how they expect to experience the project).</li> <li>How project activities, and <b>environmental changes and impacts</b> arising from the construction and operation of the project may affect: <ol style="list-style-type: none"> <li>health and wellbeing;</li> <li>people's way of life and livelihoods, including those who work in tourism;</li> <li>people's surroundings (including natural values) and culture, including the connection and value placed on the land by local Aboriginal communities;</li> <li>affected community, including composition, cohesion and people's sense of place;</li> <li>access to and use of infrastructure, local services, and facilities, including accommodation and cumulative impacts on tourism;</li> <li>personal and property rights;</li> <li>fears and aspirations, as relevant; and</li> <li>distributive equity i.e. the different ways in which people in different places, social and demographic groups and generations may</li> </ol> </li> </ol>	<p>Social Impact Assessment Guideline for State Significant Projects (DPIE, 2021)</p>

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	experience the positive and negative impacts from the project and be disproportionately affected.	
<b>13. Soils and Contamination</b>  The environmental values of land, including soils, subsoils and landforms, are protected.  Risks arising from the disturbance and excavation of land and disposal of soil are minimised, including disturbance to acid sulfate soils and site contamination.	<ol style="list-style-type: none"> <li>1. Verify the risk of <b>acid sulfate soils</b> (Class 1, 2, 3 or 4 on the Acid Sulfate Soil Risk Map) within, and in the area likely to be impacted by, the project and map the location of the soils.</li> <li>2. The impact of the project on <b>acid sulfate soils</b> (including impacts of acidic runoff offsite) in accordance with the current guidelines.</li> <li>3. The likelihood of <b>land contamination</b> and identify if remediation of the land is required, having regard to the ecological and human health risks posed by the contamination in the context of past, existing and future land uses. Where assessment and/or remediation is required, the EIS must document how the assessment and/or remediation would be undertaken in accordance with relevant guidelines made or approved under s105 of the <i>Contaminated Land Management Act 1997</i>.</li> <li>4. Identify whether <b>soil salinity</b> is likely to be an issue and if so, determine the presence, extent and severity of soil salinity within the project area, and assess the impacts of the project on soil salinity and how it may affect groundwater resources and hydrology.</li> <li>5. The impacts on <b>soil and land resources</b> (including erosion risk or hazard). Particular attention must be given to soil erosion and sediment transport consistent with the practices and principles in the current guidelines.</li> </ol>	Acid Sulfate Soils Assessment Guidelines (DoP, 2008)  Acid Sulfate Soils Manual (Acid Sulfate Soils Management Advisory Committee, 1998)  Managing Land Contamination: Planning Guidelines SEPP 55 –Remediation of Land, (DUAP & EPA, 1998)  Contaminated Land Guidelines: Consultants Reporting on Contaminated Sites (EPA, 2020)  Guidelines for the NSW Site Auditor Scheme (3 <sup>rd</sup> Edition) (EPA, 2017)  Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (EPA, 2015)  Urban and regional salinity – guidance given in the Local Government Salinity Initiative booklets ( <a href="http://www.environment.nsw.gov.au/salinity/solutions/urban.htm">http://www.environment.nsw.gov.au/salinity/solutions/urban.htm</a> ) which includes <i>Site Investigations for Urban Salinity</i> (DLWC, 2002)  Landslide risk management guidelines presented in Australian Geomechanics Society (2007)  Soil and Landscape Issues in Environmental Impact Assessment (DLWC 2000)  Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D.

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		Main Roads; E. Mines and Quarries) (DECC, 2008)  Other guidelines made or approved under section 105 of the <i>Contaminated Land Management Act 1997</i>
<b>14. Sustainability</b>  The project reduces the NSW Government's operating costs and ensures the effective and efficient use of resources.  Conservation of natural resources is maximised.	1. The <b>sustainability of the project</b> in accordance with the Infrastructure Sustainability Council of Australia (ISCA) <i>Infrastructure Sustainability Rating Tool</i> and recommend an appropriate target rating for the project.  2. Consider and assess the project against current guidelines including targets and strategies to improve Government efficiency in use of water, energy and transport.	Infrastructure Sustainability Rating Tool Scorecard relating to energy and carbon for large infrastructure projects (ISCA)
<b>15. Transport and Traffic</b>  Network connectivity, safety and efficiency of the transport system in the vicinity of the project are managed to minimise impacts.  The safety of transport system customers is maintained.  Impacts on network capacity and the level of service are effectively managed.  Works are compatible with existing infrastructure and future transport corridors.	1. <b>Construction transport and traffic (vehicle, pedestrian and cyclists) impacts</b> , including, but not necessarily limited to: <ul style="list-style-type: none"> <li>(a) a considered approach to route identification and scheduling of construction vehicle movements, including spoil haulage;</li> <li>(b) the indicative number, frequency and size of construction-related vehicles (passenger, commercial and heavy vehicles, including spoil haulage and tunnel fit out vehicles), including the indicative number and route of heavy vehicle movements outside of standard construction hours;</li> <li>(c) construction worker parking, including the location and capacity of proposed parking facilities;</li> <li>(d) the nature of existing traffic (types and number of movements) on construction access routes (including consideration of peak traffic times, when alternative public transport arrangements are in place during rail track work, pedestrian and cyclist activities and on-street parking arrangements);</li> <li>(e) access constraints and impacts on public transport (infrastructure and services), pedestrians and cyclists, town centres, businesses and schools; and</li> </ul>	Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2007)  Cycling Aspects of Austroads Guides (Austroads, 2014)  Planning Guidelines for Walking and Cycling (DIPNR, 2004)

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	<ul style="list-style-type: none"> <li>(f) how construction of the project affects the capacity of, and the need to close, divert or otherwise reconfigure elements of, the road, cycle and pedestrian network;</li> <li>(g) details of how construction and scheduling of works are to be coordinated in regard to public events and cumulative traffic impacts resulting from concurrent work on the project and other major projects, under or preparing for or commencing construction in the vicinity of the proposal;</li> <li>(h) the likely risks of the project to public safety; and</li> <li>(i) impacts to on-street parking, including to residents, businesses and schools.</li> </ul> <p>2. Model the <b>operational transport impacts</b> of the project including, but not necessarily limited to:</p> <ul style="list-style-type: none"> <li>(a) forecast travel demand and traffic volumes for the project and the surrounding road, cycle and public transport network;</li> <li>(b) travel time analysis;</li> <li>(c) performance of key interchanges and intersections by undertaking a level of service analysis at key locations;</li> <li>(d) wider transport interactions (local and regional roads, cycling, public and freight transport);</li> <li>(e) induced traffic and operational implications for public transport (particularly with respect to strategic bus corridors and bus routes) and consideration of opportunities to improve public transport;</li> <li>(f) property and business access and on-street parking; and</li> <li>(g) an explanation of the scope of the modelled area, including justification of the nominated boundaries.</li> </ul>	
<p><b>16. Waste</b></p> <p>All wastes generated during the construction and operation of the project are effectively</p>	<p>1. Predicted <b>waste generated</b> from the project during construction and operation, including:</p> <ul style="list-style-type: none"> <li>(a) classification of the waste in accordance with the current guidelines;</li> </ul>	EPA's Waste Classification Guidelines (as in force from time to time)

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stored, handled, treated, reused, recycled and/or disposed of lawfully and in a manner that protects environmental values.	<ul style="list-style-type: none"> <li>(b) estimates / details of the quantity of each classification of waste to be generated during the construction of the project, including bulk earthworks and spoil balance;</li> <li>(c) handling of waste including measures to facilitate segregation and prevent cross contamination;</li> <li>(d) management of waste including estimated location and volume of stockpiles;</li> <li>(e) waste minimisation and reuse;</li> <li>(f) lawful disposal or recycling locations for each type of waste; and</li> <li>(g) contingencies for the above, including managing unexpected waste volumes.</li> </ul> <p>2. Potential environmental impacts from the excavation, handling, storage on site and transport of waste particularly with relation to sediment/leachate control, noise and dust, and water quality impacts.</p>	
<p><b>17. Water - Hydrology</b></p> <p>Long term impacts on surface water and groundwater hydrology (including drawdown, flow rates and volumes) are minimised.</p> <p>The environmental values of nearby, connected and affected water sources, groundwater and dependent ecological systems including estuarine and marine water (if applicable) are maintained (where values are achieved) or improved and maintained (where values are not achieved).</p> <p>Sustainable use of water resources.</p> <p>Consideration of tunnel boring methods to</p>	<ul style="list-style-type: none"> <li>1. Describe (and map) the <b>existing hydrological regime</b> for any surface and groundwater resources (including reliance by users and for ecological purposes or by groundwater dependent ecosystems) likely to be impacted by the project, including stream orders, as well as the location of all proposed intake and discharge locations</li> <li>2. Provide a detailed <b>construction and operational water balance</b> for ground and surface water including the volume, frequency and quality of discharges at proposed intake and discharge locations, and confirmation that any water supply needs can be sourced from an appropriately authorised and reliable supply, including the source of the supply.</li> <li>3. <b>Surface and groundwater hydrological impacts</b> of the construction and operation of the project and any ancillary facilities (both built elements and discharges) in accordance with the current guidelines, including:</li> </ul>	<p>Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (DECC, 2008)</p> <p>NSW Aquifer Interference Policy (DPI, 2012)</p> <p>Risk assessment Guidelines for Groundwater Dependent Ecosystems (Office of Water, 2012)</p> <p>Minimum requirements for pumping tests on water bores in NSW (DPIE, 2019)</p> <p>Australian Groundwater Modelling Guidelines (National Water Commission, 2012)</p>



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minimise groundwater drawdown impacts and dewatering's.	<ul style="list-style-type: none"> <li>(a) natural processes within rivers and wetlands that affect the health of fluvial and riparian systems;</li> <li>(b) impacts to downstream water-dependent fauna and flora;</li> <li>(c) impacts from any permanent and temporary interruption of groundwater flow, including the extent of drawdown, barriers to flows, implications for groundwater dependent surface flows, waterfalls, hanging swamps, other ecosystems and species, groundwater users, and the potential for settlement;</li> <li>(d) changes to environmental water availability and flows, both regulated/licensed and unregulated/rules-based sources;</li> <li>(e) direct or indirect increases in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and destabilisation of escarpment features;</li> <li>(f) measures for minimising the effects of proposed stormwater and wastewater management during construction and operation on natural hydrological attributes (such as volumes, flow rates, management methods and re-use options) and on the conveyance capacity of existing stormwater systems where discharges are proposed through such systems; and</li> <li>(g) water take (direct or passive) from all surface and groundwater sources with estimates of annual volumes during construction and operation.</li> </ul> <p>4. Identify any requirements for <b>baseline monitoring</b> of hydrological attributes through the use of groundwater pump testing and other hydrogeological testing to assess regional impacts on aquifers, including open hole monitoring bores along and perpendicular to the tunnel alignment, to assess the existing regional hydrogeology, potential groundwater extraction impact area. The results of the baseline monitoring must be included in the EIS.</p> <p>5. Identify design approaches to minimise or prevent <b>drainage of</b></p>	

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	<p><b>groundwater</b> through the use of tunnel excavation/boring methods.</p> <p>6. A series of <b>detailed geological cross sections</b> and long sections of the underground tunnel, these include:</p> <ul style="list-style-type: none"> <li>(a) schematic sections reflecting the detailed geology as recorded in the geological drillhole logs, relative position of the investigation drill holes, groundwater intersections, groundwater dependent ecosystems elevations plus the proposed tunnel, and</li> <li>(b) emphasis on those locations where the tunnel rises to the surface, has connections to immersed tunnel sections, or intersects zones of high concentration of discontinuities;</li> <li>(c) perpendicular sections at a regular spacing, developed on the basis of the geology;</li> <li>(d) details on the locations of faults and geological changes and mapped on the sections; and</li> <li>(e) conceptual three-dimensional block model for the tunnel(s) demonstrating the relationship of the tunnel(s) to existing landforms (including surrounding cliffs, valleys, waterways), groundwater levels and groundwater dependent ecosystems.</li> </ul> <p>7. A schematic of the <b>hydrogeological conceptual model</b> must include geology units, known geological structures, proposed tunnel alignment, relevant monitoring bores and their relative depths, with groundwater levels and groundwater dependent ecosystems. The model must be developed in consultation with DPIE Water.</p> <p>8. Assessment of <b>groundwater impacts</b> must be undertaken using a numerical model (steady state/transient). The model should be in a form that can be made available to DPIE Water to access along with the data used for model construction and predictions.</p> <p>9. Details of the proposed <b>groundwater monitoring</b> to identify construction and operational impacts including changes to groundwater levels,</p>	

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	impacts on groundwater dependent ecosystems and volume of groundwater discharges.	
<b>18. Water - Quality</b>  The project is designed, constructed and operated to protect the NSW Water Quality Objectives where they are currently being achieved, and contribute towards achievement of the Water Quality Objectives over time where they are currently not being achieved, including downstream of the project to the extent of the project impact including estuarine and marine waters (if applicable).	<b>1. Water quality</b> impacts, including: <ul style="list-style-type: none"> <li>(a) stating the ambient NSW Water Quality Objectives (NSW WQO) and environmental values for the receiving waters relevant to the project, including the indicators and associated trigger values or criteria for the identified environmental values in accordance with the Australia &amp; New Zealand <i>Guidelines for Fresh &amp; Marine Water Quality</i> and/or local objectives, criteria or targets endorsed by the NSW Government;</li> <li>(b) identifying and estimating the quality and quantity of pollutants that may be discharged and the degree of impact that any discharge(s) may have on the receiving environment, including consideration of all pollutants that pose a risk of non-trivial harm to human health and the environment;</li> <li>(c) identifying the rainfall event that the water quality protection measures will be designed to cope with;</li> <li>(d) the significance of any identified impacts including consideration of the relevant ambient water quality outcomes;</li> <li>(e) demonstrating how construction and operation of the project will, to the extent that the project can influence, ensure that: <ul style="list-style-type: none"> <li>- where the NSW WQOs for receiving waters are currently being met they will continue to be protected; and</li> <li>- where the NSW WQOs are not currently being met, activities will work toward their achievement over time;</li> </ul> </li> <li>(f) justifying, if required, why the WQOs cannot be maintained or achieved over time;</li> <li>(g) demonstrating that all practical measures to avoid or minimise water pollution and protect human health and the environment from harm are investigated and implemented;</li> </ul>	NSW Water Quality and River Flow Objectives at <a href="http://www.environment.nsw.gov.au/ieo/">http://www.environment.nsw.gov.au/ieo/</a>  Using the ANZECC Guidelines and Water Quality Objectives in NSW (DEC, 2006)  Australian and New Zealand Guidelines for Fresh and Marine Water Quality at: <a href="https://www.waterquality.gov.au/anz-guidelines">https://www.waterquality.gov.au/anz-guidelines</a>  Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)  Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DECC, 2008)  Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (DECC, 2008)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	<ul style="list-style-type: none"> <li>(h) identifying sensitive receiving environments and develop a strategy to avoid or minimise impacts on these environments; and</li> <li>(i) identifying proposed monitoring locations, monitoring frequency and indicators of surface and groundwater quality. The results of the baseline monitoring must be included in the EIS.</li> </ul>	