

**Table of Response to Submissions SSD 6864 – Sumatran Tiger Adventure, Taronga Zoo**

Item	Response
<b>Department of Planning and Environment</b>	
<p>Architectural Plans</p> <ul style="list-style-type: none"> <li>Update the existing and demolition site plan and the proposed site plan (where necessary) to show the location from which each section drawing has been taken (including the location of Site Section 2 on the existing and demolition site plan).</li> </ul>	<p>Revised drawings:</p> <ul style="list-style-type: none"> <li>Site Plan A DA 004 Rev 03; and</li> <li>Roof Plan A DA 005 Rev 03.</li> </ul>
<p>Masterplan</p> <ul style="list-style-type: none"> <li>Provision of electronic copies of the Masterplan for the Zoo including: <ul style="list-style-type: none"> <li>Zoo 2000 'The View to the Future', December 1999;</li> <li>Taronga Zoo Master Plan Urban Design Principles and Visual Analysis (UDAS Guidelines), May 2001; and</li> <li>Taronga Zoo Conservation Strategy, July 2002.</li> </ul> </li> </ul>	<p>An electronic link is provided to the DoPE separately.</p>
<p>Tree Removal</p> <ul style="list-style-type: none"> <li>Clarify if any trees proposed to be removed as part of the SSD has been granted approval to be removed under the Aboriginal Heritage Impact Permit (AHIP) for the AHIMS site #45-6-1959.</li> </ul>	<p>Section 170 approval was provided in September 2014 from the Heritage Division of the NSW Office of Environment &amp; Heritage for the removal of the which involved removal of:</p> <ul style="list-style-type: none"> <li>A group of Moreton Bay Fig trees, identified as part of 179L of the Section 170 register; and</li> <li>Two out of four Broad Leaf Paperbarks, identified as 71L of the Section 170 register.</li> </ul> <p>The approval has been granted for the AHIP on 9 July 2015 which also provides for the removal of the Moreton Bay Fig trees as part of the proposed works under the AHIP.</p> <p>All other trees to be removed other than the above identified trees are</p>

	part of this SSD application.
<p>Historic Heritage</p> <ul style="list-style-type: none"> <li>Clarify if and to what extent the recommended mitigative measures in Section 5.3 of the Heritage Impact Statement (HIS) will be implemented in the detailed design and construction of the project.</li> <li>Further investigate the impact on existing original pathway (S170 item 99L) and the feasibility of its retention (in part or full). There appears to be an inconsistency between the HIS (page 69) which is in conclusive of the treatment of the path and the Existing and Demolition Site Plan, which indicates that this pathway will be removed.</li> <li>Further advice on the retention of all or part of this pathway and/or mitigative measures for its removal is required.</li> </ul>	<p>The mitigation measures in Section 5.3 of the HIS will be implemented.</p> <p>With respect to Section 5.3.1, archaeological and architectural investigations will be undertaken to determine the extent, if any of remaining original elements associated with the 1930s pits, stone walls and rock shelves. If these elements are found or uncovered the feasibility of retaining these elements will considered with regard to how they impact on animal management measures. If it is assessed that such elements cannot be retained, processes for archival recording and interpretation will be undertaken.</p> <p>The s170 listed item 99L is the path running through the centre of the site from the Sun Bears exhibit to past Tahr Mountain as annotated in the updated attached architectural plans.</p> <p>The paving and the width of the path has been altered over time in association with projects and through maintenance works and installation of services. The surface finishes are concrete, bitumen and bricks have all been replaced in the late 20<sup>th</sup> century or since and are not original. It is not proposed to maintain the alignment of the existing path through the exhibit but the section of the alignment of the path in front of Sun Bears exhibit and west of Tahr Mountain will remain. The retention of the alignments in these locations will maintain the physical connection of the pathway through the exhibit.</p> <p>Much of the pathway has been excavated for service installation in the late 20<sup>th</sup> century with associated disturbance of the ground below the path. It is not known whether any sections of original path formation survive below the new paving. Archaeological investigations of the original pathway will be undertaken at key points (to be determined under advice from the proponent's archaeologist/heritage consultant) to investigate and record evidence of the original pathway configuration and materials. Interpretative measures will be undertaken as part of the exhibit where required and if appropriate.</p>

NSW Department of Primary Industries	
Provide a condition with the approval requiring the proponent to obtain the approval of the Secretary of the Department of Industry, Skills and Regional Development under Section 91 of the Exhibited Animals Protection Act 1986 before commencing any alteration to the subject licensed animal display establishment.	No objection.
NSW Environment Protection Authority	
<p>Site investigation and remediation</p> <ul style="list-style-type: none"> <li>The proponent should commit to: <ul style="list-style-type: none"> <li>Satisfying the requirements of Part 7 of the Protection of the Environment Operations (Waste) Regulation 2014 in regard to the transport and disposal of any asbestos material encountered during the project.</li> <li>Consulting with Workcover NSW concerning the handling of any asbestos waste.</li> </ul> </li> <li>It is recommended that the proponent be required to prepare and implement measures for the proper handling, transport and disposal of any asbestos waste encountered on site during the course of the project.</li> </ul>	No objection.
<p>Waste control and management (general)</p> <ul style="list-style-type: none"> <li>The proponent should manage waste in accordance with the waste management hierarchy established under the <i>Waste Avoidance and Resource Recovery Act 2001</i> with the priorities for <i>Avoidance</i>, <i>Resource recovery</i> and <i>Disposal</i>.</li> <li>All waste generated during the project must be properly assessed, classified and managed in accordance with the EPA's guidelines to ensure proper treatment, transport and disposal at a landfill legally able to accept those wastes.</li> <li>Implementation of site controls and management to mitigate mud and waste being tracked off the site during the course of the</li> </ul>	No objection.

<p>project.</p> <ul style="list-style-type: none"> <li>It is recommended that the proponent be required to ensure that: <ul style="list-style-type: none"> <li>All waste generated during the project is assessed, classified and managed in accordance with the “<i>Waste Classification Guidelines Part 1: Classifying Waste</i>” (EPA, Nov 2014);</li> <li>Covering of vehicles or trailers used to transport waste or excavation spoil before leaving the site to prevent spillage or escape of any dust, waste or spoil; and</li> <li>Removal of mud, splatter, dust and other material from the wheels, underside or body of vehicles, trailer or motorised plant before leaving the site.</li> </ul> </li> </ul>	
<p>Dust control and management</p> <ul style="list-style-type: none"> <li>The proponent should commit to minimising dust emissions on the site and preventing dust emissions from the site.</li> </ul>	<p>The mitigation measures contained in the submitted Construction Management Plan (CMP) identifies several dust management measures as follows:</p> <ul style="list-style-type: none"> <li>Screens to be placed around the site.</li> <li>If / where possible, large concrete elements to be crushed off site.</li> <li>Construction activities and vehicle access routes to be hosed down.</li> <li>Construction vehicles to be hosed down when leaving site.</li> <li>Adjacent roadways approaching site to be regularly cleaned.</li> </ul> <p>Section 10 of the submitted EIS confirms that the mitigation measures contained in the CMP will form part of the proposed mitigation measures for the project.</p>
<p>Erosion and sediment control</p> <ul style="list-style-type: none"> <li>The EPA emphasises the importance of: <ul style="list-style-type: none"> <li>Not commencing earthmoving or vegetation removal until appropriate erosion and sediment controls are in place, and</li> <li>Daily inspection of erosion and sediment controls which is fundamental to ensuring timely maintenance and repair of those controls.</li> </ul> </li> <li>The EPA refers to the <i>Managing Urban Stormwater Soils and Construction, 4<sup>th</sup> Edition</i> published by Landcom (the Blue Book)</li> </ul>	<p>Erosion and sediment control measures will be implemented prior to commencing earthworks and vegetation removal. These are illustrated in the attached drawing H08/P1.</p> <p>Daily inspection of the erosion and sediment control measures will take place by the contractor.</p> <p>An amended Proposed Mitigation Measures is submitted with this response table to include implementation of the erosion and sediment control measures and daily inspection.</p>

<p>Noise and vibration</p> <ul style="list-style-type: none"> <li>▪ The EPA refers to the <i>Interim Construction Noise Guideline</i> (2009) (ICNG) which provides guidance material concerning noise mitigation and management measures.</li> <li>▪ The Proponent should commit to: <ul style="list-style-type: none"> <li>– Identifying surrounding noise sensitive land uses, and</li> <li>– Undertaking a noise and vibration impact assessment of site preparation, bulk earthworks and construction activities, especially any such activities – <ol style="list-style-type: none"> <li>(1) Likely to generate noise with annoying or intrusive characteristics, or</li> <li>(2) Proposed to be undertaken outside the recommended standard hours in Table 1 of the ICNG.</li> </ol> </li> </ul> </li> <li>▪ The Proponent should commit to: <ul style="list-style-type: none"> <li>– Compliance with the standard construction hours set out in ICNG Table 1 Chapter 2 which is Monday to Friday 7 am to 6 pm; Saturday 8 am to 1 pm; and no work on Sundays or public holidays.</li> <li>– Note the EPA accepts that certain emergency work may need to be undertaken urgently outside of standard recommended hours.</li> <li>– Schedule intra-day 'respite periods' for construction activities identified in the ICNFG as being particularly annoying to surrounding residents and other noise sensitive receivers.</li> <li>– Undertaking a safety risk assessment of construction activities to determine whether it is practicable to use audible movement alarms of a type that would minimise the noise impact on surrounding noise sensitive receivers, without compromising safety.</li> </ul> </li> </ul>	<p>No objection.</p>
<p>Operation Phase</p> <ul style="list-style-type: none"> <li>▪ EPA considers that environmental impacts can be averted by responsible environmental management practices. The EPA acknowledges that solid and liquid wastes will be managed in</li> </ul>	<p>Noted. No further response required.</p>

accordance with existing practices including the direction of run off and waste water from the exhibit to the existing water recycling plant which has an existing environment protection licence.	
Fire & Rescue NSW	
No comments.	Noted. No further response required.
Foreshores and Waterways Planning and Development Advisory Committee of the Department of Planning and & Environment	
The redevelopment of the exhibit will remain in keeping with the overall character and appearance of the zoo when viewed from the harbour. As such, the Committee does not have any specific comments.	Noted. No further response required.
NSW Office of Environment & Heritage	
<p>Aboriginal cultural heritage</p> <p>The EIS does not identify whether additional water management other than the removal of existing structures and paths is necessary and if so what is proposed.</p> <p>Further advice should be provided as to whether additional water re-direction is necessary and required to address current water movement over and through the rock shelter is required.</p> <p>OEH recommends that these details should be clearly incorporated into the plans and EIS documentation and provided to DPE prior to determination of the SSD. Note that further referral to OEH is not required if DPE is satisfied that this matter has been appropriately addressed.</p>	<p>A new concrete spoon drainage line is proposed to sit between the existing path and new wall mesh enclosure line of proposed exhibit 3 to accommodate and redirect water from the rock shelter to a new stormwater pit which will form part of the broader hydraulic plans for the site.</p> <p>This is illustrated in updated the Hydraulic Stormwater Plan and Section drawings A – DA- 20.</p>
Transport for NSW	
Suggests the following condition be added to a development consent:	The submitted CMP provides an overview of construction traffic

<ul style="list-style-type: none"> <li>• <i>Prior to the commencement of any works on the Site, a Construction Traffic and Pedestrian Management Plan prepared by a suitably qualified person shall be submitted to the Principal Certifying Authority (PCA). The Plan must be prepared in consultation with TfNSW, and Roads and Maritime Services. The Plan shall address, but not be limited to, the following matters:</i> <ul style="list-style-type: none"> <li>a. <i>details of demolition and construction activities and timing of these activities;</i></li> <li>b. <i>ingress and egress of vehicles to the Site;</i></li> <li>c. <i>loading and unloading, including construction zones;</i></li> <li>d. <i>the staging of works;</i></li> <li>e. <i>predicted construction traffic movements, types and routes, and</i></li> <li>f. <i>pedestrian and traffic management methods.</i></li> </ul> </li> </ul> <p><i>The Applicant shall submit a copy of the final Plan to Mosman Council for endorsement, prior to the commencement of work."</i></p>	<p>management measures.</p> <p>A detailed Site, Construction Traffic and Pedestrian Management Plan will be prepared for endorsement with Mosman Council prior to commencement of work.</p>
NSW Heritage Council	
<p>The location and design of the new exhibit should not adversely affect nearby significant elements such as the Sun Bear Exhibit, Tahr Mountain, natural rock benches in the Snow Leopard exhibit and significant portions of the Cats of Asia exhibit.</p>	<p>The Sun Bear exhibit and Tahr Mountain will not be affected.</p> <p>The Snow Leopard exhibit will be removed but the significant natural rock benches will remain.</p> <p>The Cats of Asia exhibit will be partly removed, including the dividing wall to accommodate new exhibit but the back pit walls and some of the original containing walls will be retained. Detailed assessment of the structures will be undertaken when the pits are accessible to confirm what original fabric survives. Should this be confirmed consideration will be given to retaining elements or parts such as the footprint / footings of the dividing wall.</p>
<p>New work should be visually subservient where possible so as not to overwhelm the setting of these significant elements.</p> <p>Significant fabric should be retained and any fixings should either be reversible or not cause permanent damage.</p> <p>Detail design of pylon footings and tensile structure edge wall need to have regard for heritage items in their vicinity in developing services drawings. This is particularly pertinent in the 1930s animal pits, stone</p>	<p>Tahr Mountain is a prominent feature in the zoo landscape and will not be overwhelmed by the proposed structures. The proposed structures closest to Tahr Mountain are the Midpoint building and the inbound covered viewing bridge which have a roof height of RL 48.90 and RL 49 respectively compared to Tahr Mountain which as an RL 53.560. In combination with the setback of the proposed structures from Tahr Mountain and the proposed scale and external materials, the setting of Tahr Mountain will not be overwhelmed.</p>

<p>walls within the site and rock shelves in the former Snow Leopard exhibit, to allow adequate impact assessment.</p> <p>The cave in the Lion enclosure and the wall dividing it and the Tiger enclosures should be retained and form part of the new exhibit.</p> <p>The original and early paths have been assessed to be of exceptional heritage significance. Therefore they should be retained and the final design of ground levels should take the paths' alignment and heights in to consideration. Options should be explored to enable visitors to distinguish old from new paths, where these abut, for instance by varying paving materials or colours.</p>	<p>The Sun Bears exhibit is separated from the new exhibit and the proposed entry building is appropriately designed to a height and scale that it will not impact on the setting of the Sun Bear exhibit.</p> <p>The major fig tree will be the centre of the new exhibit; whilst the natural rock benches of the Snow Leopard exhibit will form part of the Tiger Exhibit 01 and therefore remain as part of the landscape setting of an exhibit as current.</p> <p>The “Cats of Asia” remnants will form part of the tiger off-exhibit external areas and will be retained in part. Architectural and archaeological investigations will be undertaken to determine the extent of remaining original materials. If original materials are encountered, the feasibility of retaining these elements will be considered with regard to how they impact on animal management measures. For example, removal of the dividing wall and replacement with mesh screens is required to enable observation practices and measures such breeding and separation whilst enabling separated tigers to have a view to each other. If it is assessed that original elements cannot be retained, processes for archival recording and interpretation will be undertaken.</p> <p>Fixings into mock rock and into sandstone will be avoided or be reversible as far as practicable. The detailed design of pylon footings and the tensile structure edge wall will be designed so not to damage heritage items. This is reflected in a previous revision of the design near the Aboriginal site. Further consideration to footing design will be undertaken when site conditions are known and also when detailed services routes are established.</p> <p>An approximate outline of the path (item 99L) is annotated on submitted Site Plan. The paving and the width of the path has been altered over time through maintenance works and installation of services. It is not proposed to maintain the alignment of the existing path through the exhibit but the section of the alignment of the path in front of Sun Bears exhibit and west of Tahr Mountain will remain. The retention of the alignments in these locations will maintain the physical connection of the pathway through the exhibit.</p>
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	<p>Archaeological investigations of the original pathway will be undertaken at key points (to be determined under advice from the proponent's archaeologist/heritage consultant) to investigate and record evidence of the original pathway configuration and materials. Interpretative measures will be undertaken as part of the exhibit where required and if appropriate.</p> <p>The majority of the existing pathways are either bitumen or brick paved. The new pathways within the exhibit are proposed to be of stabilised decomposed granite finish or sandstone which will provide a visual distinction from the existing pathways. Additional brick paving will be provided in the entry area to the exhibit to match existing brick paving finish to continue the existing pathway treatments for a consistent approach.</p> <p>The submitted site surface design plan provides further details.</p>
<p>Careful construction planning, particularly during earthworks including vibration mitigation, are necessary to protect all significant structures including paths and other landscape affected by proposed works.</p> <p>In particular, Aboriginal hand stencils, original and early paths, the Cats of Asia exhibit and large fig tree in the centre of the exhibit should be appropriately protected from any damage during set-up and construction.</p> <p>The original path should be retained in situ and appropriately protected during works. A detailed dilapidation survey of affected paths should be also carried out prior to commencement of works so that the condition of significant paths can be monitored.</p>	<p>The submitted Construction Management Plan identifies that:</p> <ul style="list-style-type: none"> <li>▪ A selection of low vibration work methods will be adopted where possible and appropriate;</li> <li>▪ Vibration monitoring and management controls for heritage and historic structures will be further investigated.</li> <li>▪ Foundations will be constructed in such a way as to mitigate the risk of noise and vibration that may affect adjacent areas.</li> <li>▪ Bored piles to be used, instead of driven piles during constructing foundations.</li> </ul> <p>A full construction noise and vibration impact assessment and management plan will be prepared by the contractor once the structure and likely construction methods are developed further. This management plan will address the matters raised and will be prepared in consultation with the proponent's heritage and archaeological advisors.</p> <p>As identified in the recommended mitigative measures of the HIS, protection of existing heritage items during works and heritage</p>

	<p>induction processes for workers on the site will be undertaken.</p> <p>A detailed dilapidation survey of affected paths will be carried out prior to commencement of works.</p> <p>A revised Propose Mitigation Measures includes the preparation of a full construction noise and vibration impact assessment; and a dilapidation survey of the original path.</p>
<p>Zone B (or Zone 2) in the Taronga Zoo Archaeological Management Plan is identified as having high archaeological potential. An archaeological research design and methodology including mitigation and management strategies is necessary to deal with the likely potential of archaeological remains.</p> <p>A permit under Section 140 of the <i>Heritage Act 1977</i> may also be required for this work, for any excavation of the former Carnivora pits, although part have been filled later and if there is any likely impact on the original path network. Further design development may be required as a result of archaeological assessment.</p>	<p>There are no works planned in Zone B (or Zone 2).</p> <p>Archaeological investigations will be undertaken with respect to the carnivore pits and select areas of the original pathway. A permit under s140 of the Heritage Act will be sought to undertake these works. The works will be monitored by the Zoos heritage project manager to identify any unexpected remains and which would be assessed and recorded.</p> <p>As discussed above, consideration to the retention of uncovered significant items in the carnivore pits will be undertaken having regard to animal management measures. Where retention is not feasible, archival recording would be undertaken and appropriate interpretative measures will be provided as part of the exhibit.</p>
<p>The new Mid-Point Building (Ranger Outpost) adjacent to Tahr Mountain should be of recessive colours and texture, so as not to impact on significant views.</p>	<p>This can be adopted.</p>
<p>A copy of archival recordings made of the existing exhibits and surrounds should be provided to the Heritage Division in due course for its file and reference.</p>	<p>Archival recordings prior to the works have been undertaken and will be added to over the course of the project and submitted as required on completion.</p>