Addendum – Response to Submissions and Heritage Impact Statement

Sumatran Tiger Adventure – Original / Early Pathway

Introduction

An expanded Sumatran Tiger Exhibit is proposed at Taronga Zoo. Additional information was requested on 15 September by the Department of Planning and Environment regarding the removal of part of the early path alignment (item 99L) namely:

> *Assess the severity of the impact on the item*
>
> *Assess the acceptability or otherwise of the impact in the context of the benefits, impacts and justification of the project as a whole;*
>
> *Discusses the feasibility of retaining and reusing the existing path in exhibit, retaining the path but building over it, or otherwise interpreting it within the exhibit; and*
>
> *If the addendum HIS concludes that the removal is unavoidable and acceptable, a discussion of potential mitigation measures and their benefits and impacts.*

The following additional information has been prepared by Jean Rice, TSCA Senior Project Manager Heritage. This is followed by information with respect to the above points prepared by Jean Rice and Dan Djikic, Project Manager TSCA.

Section 170 Register

The individual heritage items within the site are included on the Section 170 Heritage and Conservation Register, April 1998, prepared by the Heritage Group of the New South Wales Department of Public Works and Services and subsequently updated by the Taronga Conservation Society of Australia (TSCA). The original early paths were added in 2002 as recommended by the Conservation Strategy. The citation is as follows:

Item 99 L – Original Early Paths (Endorsed 2002 Conservation Strategy)

Original pathway layout, including original balustrades, 1913-14

Integral part of the original site layout that essentially remains intact.

Associated with A S leSoeuf who designed the circulation

Level of significance: Exceptional

Response already given	**Additional Information**
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 shelfs. 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. The mitigation measures in Section 5.3 of the HIS will be implemented	A brief for archaeological advice is being prepared to investigate the early path layout (99L) and the carnivora pits (52B & 62B)
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.	Refer to the detailed analysis of the changing configuration of the path set out following.
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 20th 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.	Refer to the detailed analysis of the changing configuration of the path set out following. Four separate phases have been identified and only a portion of the path affected by the proposal dates from the original phase of exhibits, erected in conjunction with enclosures for the animals transferred from Moore Park.
Much of the pathway has been excavated for service installation in the late 20th 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.	A brief for archaeological advice is being prepared to investigate the early path layout (99L) and the carnivora pits (52B & 62B)

Additional Information - Layout of the Pathways

The layout of the original pathways (Fig. 1) shown in the Conservation Strategy prepared by GML in 2002 is based on the series of diagrams of the zoo layout prepared for visitors. The original path design took advantage of the existing topography and watercourses. No early accurate surveys of the Zoological Gardens from its opening in 1916 until the 1960s have been located that would have provided detailed information regarding the exact layout of the paths and the nature of their surface and any kerbing and guttering. The diagram of the significant path layout in the GML and subsequent studies has been taken from the sequence of diagrams in visitors guides. These diagrams are not to scale, the widths of the paths and the locations are approximate. Detailed surveys from the 1970s on show there was a hierarchy of paths, with main paths to key exhibits and smaller paths to individual buildings such as toilet blocks.

Analysis of the sequence of aerial and historic photographs indicates that whilst there was originally a path to the first lion and tiger enclosures, exhibits which date from the initial layout Zoological Gardens, there have been considerable alterations made to the detailed path layout when additional exhibits were added to the west and when exhibits were altered in the late 20th Century and since. The 1920 guide plan (Fig. 2) shows formalised paths in the area that contained exhibits, and tracks (shown dotted) beyond. The lions and tigers were initially at the furthest western extent of the initial exhibits and formal path.

The path in this location was altered to suit each new exhibit. When additional big cat enclosures were added to the west in the 1920s it appears from photos that the extension to the path was concrete. Later photos and plans / surveys indicate that is was surfaced in bitumen.

Figure 1 Original pathway layout plan prepared by GML, extracted from the Taronga Zoo Conservation Strategy 2002. The section of path affected by the proposal has been shaded purple. Some sections of the original pathway layout (elsewhere in the Zoo) have been altered since the preparation of this plan.

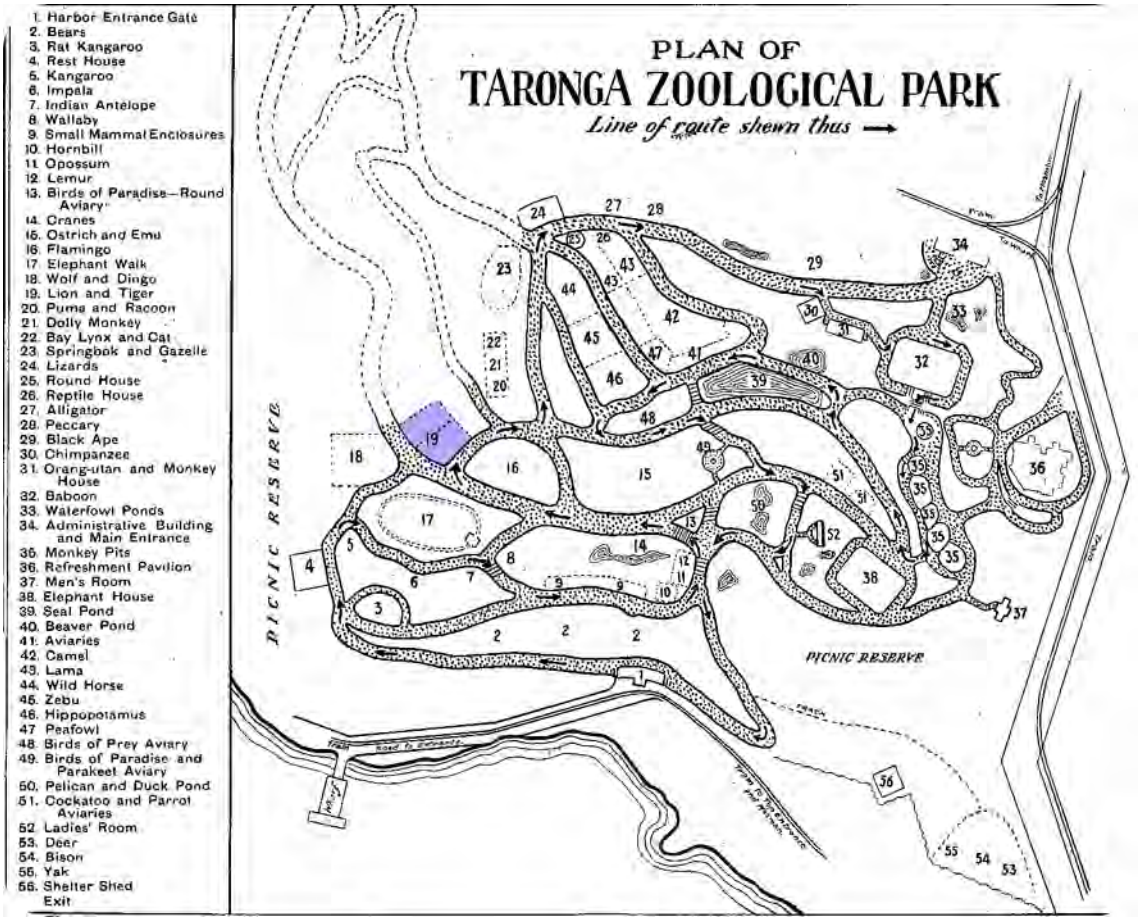

Figure 2 Diagram from 1920 guide showing the location of the exhibits at Taronga Zoo. The original section of path affected by this proposal is associated with enclosure 19 (Lion and Tiger) (now Sun Bears). This enclosure has been shaded. Beyond that the path was not formalised. The wolf and dingo exhibit (18) is opposite. Source: Taronga Zoo archives

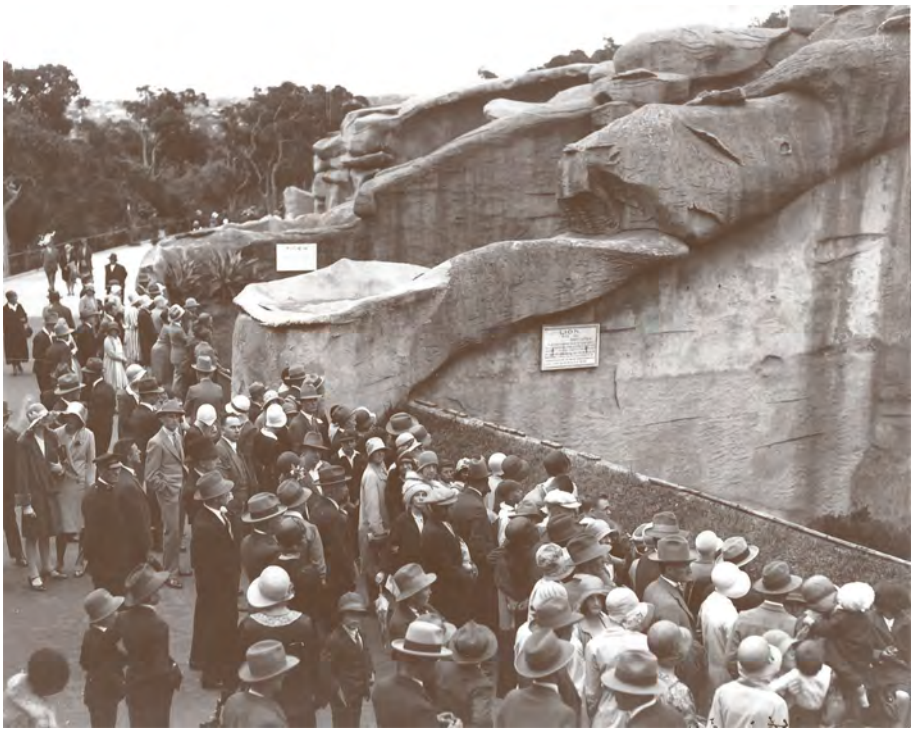

Figure 3 Crowds at the row of lions and tigers dens looking west, March 1930. The two initial dens (now Sun Bears) are in the foreground and the three later dens in the background. Note the lighter coloured second stage of the path in the background with a kerb and fence on the outer edge. Source: ML GPO 1 still 22157.

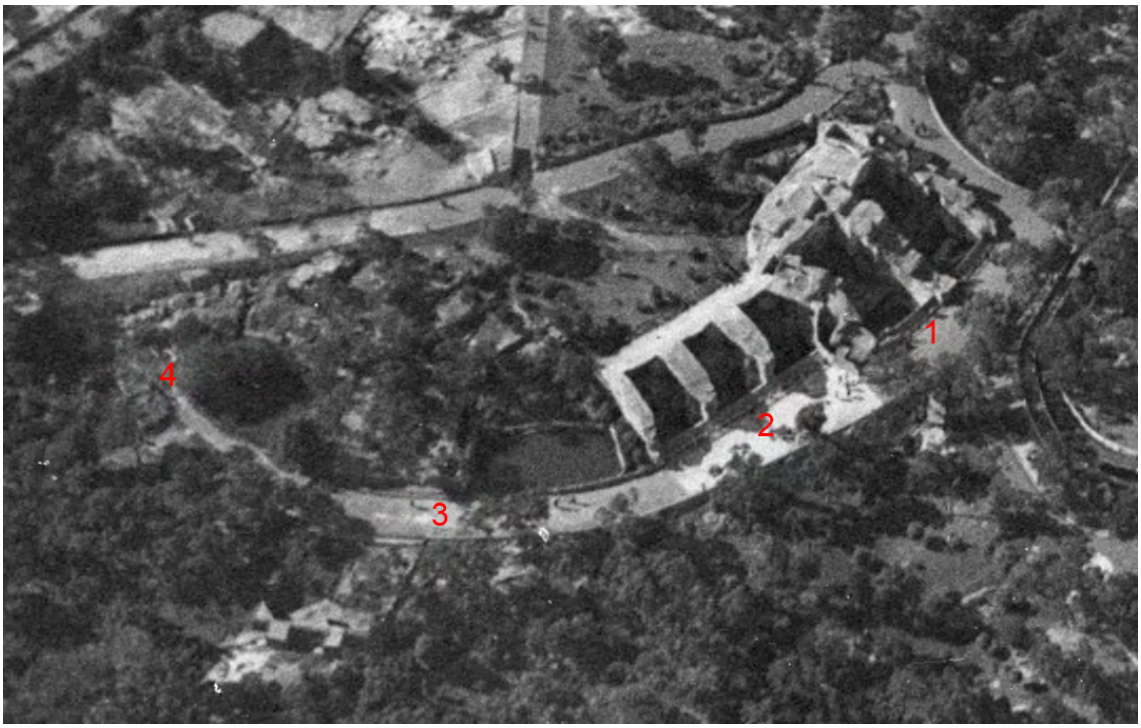

Figure 4 Undated aerial by Hall & Co of the Zoological Gardens, thought to date from the early 1930s. Note the lighter coloured second stage of the path (numbered 2). The surface of section 3 of the path varies and may have been unmade at this time. It leads past a new duck pond to the wild dog exhibit recently move further along the path. Source: ML GPO 1 still 07335.

One of the 1930s Hall & Co aerial photos (Fig. 4) of Taronga Park shows this area in detail, showing the original section of path built in conjunction with the first two carnivora pits (**1**), the lighter coloured (possibly concrete) extension to the additional three carnivora pits (which included a retaining wall on the south side of the path) (**2**) and the second extension to a new exhibit to the west (**3**). Tahr mountain and the stair to connect with the upper path was not constructed (**4**). There appears to be a barrier halfway between the numbers 3 & 4 on the photo just past the dingo exhibit. The connecting stairway can be seen on the 1943 aerial (SoHI Fig 2.15) and corresponds with the construction of Tahr Mountain in the 1930s. Later diagrams of the layout of the exhibits show the location of Tahr Mountain, erected to the west, and the additional carnivora pits built to the north and above of the three existing pits.

Unlike other portions of the Zoological Gardens, no detailed photographs have been located showing the section of path to the west of the carnivore pits. Early photographs of other parts of the Zoological gardens show the paths to have been gravel with a camber and a formed kerb and gutter. The profile of the gutter has a distinct slope to the kerb, which has a curved top.

Figure 5 Detail of a view of the path at the main entrance to the Zoological Gardens, undated but likely to have been around the time that the Zoo first opened to the public. Note the curved top of the kerb and the steep angle of the gutter running down to the kerb. Source: ML A E Foster Series 08 Sydney monuments.

Figure 6 Detail of circa 1962 aerial photo showing the area of the proposal viewed from the northeast. The section of pathway discussed in this report is arrowed red. The path can be seen extending right of Tahr Mountain. Additional exhibits lower down the hill (top of photo) were added in the mid 1950s along with a new road and a lookout above, arrowed purple).

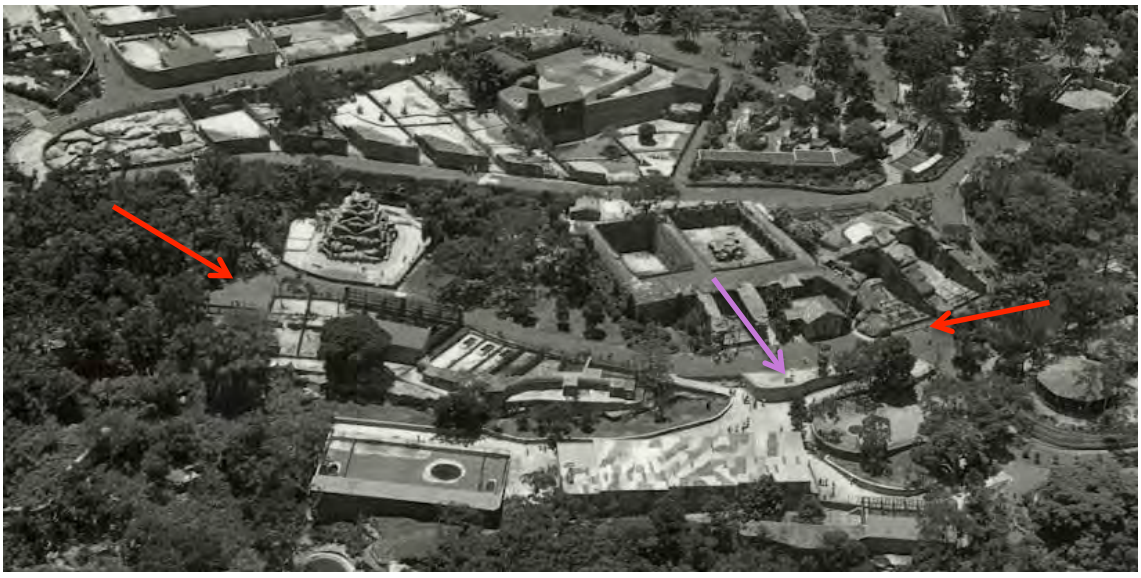

Figure 7 Detail of circa 1962 aerial photo showing the area of the proposal viewed from the south. The section of pathway discussed in this report, Dog Road, is arrowed red. The 1950s exhibits are in the foreground. The lookout (arrowed Purple) and adjacent ramp between Dog Road and the new lower level was probably also built in the 1950s. Note the new small exhibits on the south side of Dog Road. The high fence opposite Tahr Mountain is a monkey exhibit.

In the absence of detailed information the above photos and following plans have been analysed to better understand the construction of the path, subject of this report, and changes to it. The 1962 photos show additional exhibits developed below the road and the new road and exhibits further down the hill. The path appears to be bitumen in the 1960s and subsequently except for the lookout area and ramp which is lighter coloured, the same as the new road below. It may have been concrete or other material. There is generally a kerb with a fence, about a metre high, along the south side of the road. This fence does not remain. On the other side the area between tahrs and the lions is a grassed picnic area which may have had an informal edge initially, though a kerb is indicated by 1986.

Major underground services have been installed under and across the road shown in 1970s plans and include high and low voltage power, polluted stormwater and fire hydrant lines. The form of the path today resulted from another series of changes to paths in association with the 1989 construction of the Snow Leopard exhibit, alterations to the lion and tiger pits in 1991-93 and the 1999-2000 alterations to the original lion and tiger pits for the Sun Bear exhibit. There are areas of brick paving, kerbs and low walls and areas of concrete paving in front of the Sun Bears and concrete kerbs on the south of the path.

Figure 8 This detail of a Zoo plan prepared by PWD is signed by the chief engineer in 1973. It shows the high and low voltage underground electricity installation on the upper side of Dog Road. The drawing accurately shows the exhibits, ramp and lookout area on the lower side of Dog Road. Note the uneven path edge (arrowed) on the upper side. PWD plan

Figure 9 This PWD plan shows a main sewerage line on a survey dated 1975. The drawing does not accurately show the exhibits (eg. Tahr Mountain is missing) but shows fencing along the edge of the lookout and in front of the cat and dog exhibits. The same symbol is also used for the lions and tigers fencing. The opposite side of the road is dashed (not kerbed??). PWD plan

Figure 10 This detail of a Zoo plan prepared by PWD is on a survey dated 1986. It shows the materials of paving and indicates kerb lines though the kerb material is not shown. Dog Road is shown as bitumen. The loop into the picnic area at centre left of the image is paved in brick. The road is more regular than in earlier plans but varies in width. The underground water main for hydrants is on the upper side of Dog Road crossing to the opposite side near Tahr Mountain. Polluted stormwater lines are shown crossing the road in several locations. The drawing indicates the exhibit structures inaccurately but the animals in each exhibit are named. The area opposite the jaguar exhibit is noted as a lookout with a noticeboard (arrowed). Birdshow Road, top left side of plan) has been constructed and the rock mural by M Leslie is identified (centre left). PWD plan

Additional Assessment of Impact

Assess the severity of the impact on the item

The item is the original early path layout 99L throughout the whole of the Zoo and was added to the s170 register and assessed as having Exceptional significance in the 2002 Conservation Strategy. Though there are paths remaining on these alignments throughout the Zoo finishes are generally modern replacements, as is typical for bitumen which needs periodic replacement, or have been altered to brick. The path in the vicinity of the proposal was built over time as exhibits were added. It is a small part of the overall path network - 99L.

The preceding analysis indicates that not all the path impacted by the proposal is original. Some sections were added to the original path network at different times and have been altered in more recent years and trenched for services installations and upgrades. The surfaces are of recent origin having been altered and resurfaced when adjacent exhibits were redone in the late 20th century. The kerbs and gutters are all modern profiles and construction. The proposal removes portions of the existing roadway in the centre of the exhibit. The area of path to be removed includes the alignment of the original but has been widened and the fabric is not original. Portions of the current path will be retained at the east and west of the site.

The proposed change to the path in this proposal does not reduce the significance of the whole original early path layout 99L which would retain its overall exceptional significance. The area impacted is a small section of the path and was not part of the through route at the Zoo (indicated by the arrows in the 1920s plan). Until Tahr Mountain and the adjacent steps (now demolished) were later constructed it was a dead end path – Birdshow Road is much more recent.

Assess the acceptability or otherwise of the impact in the context of the benefits, impacts and justification of the project as a whole;

The impact is considered acceptable in the context of the benefits to the overall continued use of the site as a Zoo and the importance of the project in species conservation through breeding and in the wild. The path layout at the Zoo has been constantly altered to suit changes to the layout. The sequence of historic photographs, diagrams showing the layout of the exhibits, and the sequence of aerial photographs from the 1930s to date provides adequate evidence of the path layout in this section. The earliest section of path adjacent to the original lion pits (now Sun Bear) will not be affected by this proposal (but has been previously resurfaced and altered to an extent).

The benefits, impacts and justification of the project as a whole is detailed following:

The design of the Sumatran Tiger Adventure is a deliberate departure from the original La Souef layout in which the animal exhibits were located on either side of, and typically above and below, the wide visitor paths which were located on the relatively level ground between the natural stony ledges of the site. Zoos are changing to keep relevant and in line with societal change. The menagerie approach of the past where a wide range of animals where displayed in small cages as curiosities is no longer acceptable. Taronga's survival is dependent on its change of focus to species conservation aims and more naturalistic display of fewer species.

The proposed exhibit is an exemplar of this new approach as it is linked to conservation in the wild in Way Kambas National Park in Indonesia and a breeding program. This approach hopes to make Taronga of continuing relevance in the 21st Century and to contribute to its survival as an institution.

In this case maintaining the original paths within the exhibit contradicts the current thinking in modern zoo design, where the exhibit areas are focused around education, with Visitors being asked to engage with the continuing conservation efforts for the Sumatran Tiger by being introduced to issues that threaten their continued survival.

The immersive and heavily themed nature of the exhibit is a relatively new direction for Taronga Zoo, with the exhibit aiming to be experiential, theatrical, and educational. The exhibit is designed as a linear journey where the Visitor is asked to 'depart' from the surroundings of the Zoo and embark on a journey to Sumatra – to the habit of the Tiger.

Taronga aims to create a one off opportunity for visitors to be able to experience a glimpse of life in Sumatra, by creating an authentic village experience, which leads them through a replica of the Way Kambas gateway into the exhibit trail and the rainforest and habitat of the Sumatran Tiger beyond.

The exhibit trail leads through a landscaped 'rainforest' with the tigers appearing to be roaming in their natural environment on both sides of the trail. The trail itself is designed to be narrow and winding providing glimpses of the tiger in which the built environment takes the back seat to the tigers in their habitat. The current path is very wide in this area functioning as a road and having been widened at several points.

The current path layout is proposed to be retained at the entry to the exhibit at the current Sun Bear exhibit and at the access road adjacent to Tahr Mountain. The connection between the two will remain but in order to provide maximum usable area for the enclosures for Sumatran Tiger the existing path will be removed or covered and replaced with a narrow winding path constructed out of deco-granite reminiscent of a rainforest walk.

The linear journey and the rainforest trail is an integral part of the overall Project Vision for the exhibit which hopes to achieve the following:

1. *To create an iconic, adventurous and interactive carnivore exhibit that has a direct interface between the animal and visitor that encourages a intimate experience between animal and visitor in space that supports enrichment and learning;*
2. *To create a strong platform to convey the conservation message and improve visitor interaction;*
3. *To create an experience where the barriers between the animal and the visitor are removed allowing the senses to be challenged through visual, audible and smell;*
4. *To develop a world class, iconic and immersive animal exhibit that integrates animal and human connection;*
5. *To develop a unique zoo experience - something new to 'world of zoos' and exhibitory.*

Discuss the feasibility of retaining and reusing the existing path in exhibit, retaining the path but building over it, or otherwise interpreting it within the exhibit; and

The above section comments on the proposed exhibit and intention of the path design. The existing path is too wide to perform in the required way and the narrower and longer path proposed means people are in the exhibit longer and creates a more immersive experience with the design giving the feeling that viewers are within the exhibit and within the tigers' environment. The path is also designed carefully for grades to allow for equitable access and to relate to the surrounding structures and natural landforms. The design is to go up a ramp to the entry building and then gradually grade down through the exhibit to exit and the same level as the start. The level of the existing path is not consistent with this and to achieve this some adjacent ground levels have to be changed. There will also be considerable excavation in the area because of the density of major underground services already in the ground and the new services required.

Some small sections of path will be retained in the exhibit but buried or built over and impacted by excavation for structures such as footings and services installations. The Civil Engineering drawings show the areas of cut and fill. Where the path is in a filled area it can remain buried. Where the path is in a cut area it will be excavated with the exception of the exit building where the cut indicated on the drawing is

for footings only, for the floor structure which will be cantilevered over the existing stone wall and will leave the existing path under the new slab.

It is feasible to interpret the former line of the path in the exhibit particularly where new paths cross the line of the old path. The edges of the old path could be indicated by a line of sandstone paving (or other material) through the, otherwise gravel, new path. This could continue in the outbound viewing areas 1 and 2 and into some adjacent parts of the exhibit.

If the addendum HIS concludes that the removal is unavoidable and acceptable, a discussion of potential mitigation measures and their benefits and impacts.

It is concluded that the existing path is inconsistent with the proposal and its removal in part and building over in part is unavoidable and acceptable. Potential mitigations measures include archaeological investigation, archival recording and interpretation. As discussed above, one option is the interpretation on site of the line of the former path. This would have the benefit of delineating for those interested the line of the former path. This would not be apparent to most people and would need to be supported by interpretive information.

This could be in the form of a display or brochure or online information. Most visitors are unlikely to want detailed information about the past configuration however it should be available for those who do and for future planners and designers so information is not lost about the extent of change. Options include information in a museum or similar setting (not yet setup at the Zoo), in physical signage on site that may have detail or may be brief and refer the visitor to information available elsewhere – such as online or in an electronic display at the site. The Zoo's website does have historical information and information about this part of the site could be added. Website information could be structured to enable printing as a leaflet. It is considered the best approach would be simple information on site with links to electronic information for those interested. This is in part because of the nature of the exhibit and the density of information being conveyed about species conservation.

The original configuration of the lion (1935) and tiger (1939) pits and the change to them during this project could also be similarly interpreted.

Interpretation of the change and former configuration would have the benefit of allowing those interested to be informed about the original design and changes to it.

As a mitigating measure it is also proposed that an archaeological investigation and watching brief be carried out prior to and during the construction works. Following the preparation of a research design and obtaining of a permit the locations requiring monitoring or excavation would be identified - both prior to works and during works. The walkway is now closed to the public and investigation could now be carried out to identify any original kerbs and other construction. The tiger and lion pits are not accessible until the exhibit is closed and animals moved. Once this is done the currently partly infilled pits can be investigated to identify the extent of survival of original fabric both above and below ground. Once this information is known the design can be adjusted to minimise impacts or, if this is not possible, a record can be made. A watching brief would enable any unexpected details or material found during construction to be identified and recorded.

In addition the extent of works are to be recorded. An archival photographic record has been made prior to the closure of the exhibits. This would be added to during the project recording the change and any details of original and early construction uncovered during works. Prior to work commencing a dilapidation report will also be prepared by the contractor.

The progress of the archaeological excavation and monitoring works will be photographed and the locations excavated & monitored will be mapped. If evidence of the early path is uncovered, its construction will be documented.

Jean Rice, Senior Project Manager, Heritage, TCSA and Dan Djikic, Project Manager, TCSA