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ASBESTOS INSPECTION REPORT

PROPOSED SUMATRAN TIGER ADVENTURE

MOSMAN TARONGA ZOO SITE

Report Prepared for:
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Email: ddijikic@zoo.nsw.gov.au

Report prepared by:

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Pickford & Rhyder Consulting

Date: 2 March 2015

Ref. Taronga-150227-sumatran tiger adventure report

I. EXECUTIVE SUMMARY

A survey for asbestos-containing materials (ACM) was carried out on 26 February 2015 at the Mosman Taronga Zoo site.

The general areas for inspection included 'dog row' and carnivorous cat exhibits which will be demolished to make way for the proposed Sumatran Tiger Adventure.

In the areas inspected, no ACM was found.

Buried ACM (including asbestos cement fragments and pipes) is likely to be present at the site. For additional information regarding buried ACM, please refer to Section VII.

For further information regarding results of the asbestos inspection, please refer to the Asbestos Register table (Section VI of this Report).

II. INTRODUCTION

As requested by Mr Daniel Djikic, an asbestos inspection survey was carried out by Linda Apthorpe of Pickford & Rhyder Consulting on 26 February 2015 at the Mosman Taronga Zoo site.

The asbestos inspection was primarily conducted to identify and record location of ACM in preparation for major site renovations and building of a Sumatran Tiger Adventure. The general areas for inspection included 'dog row' and carnivorous cat exhibits (hereafter, inspection area).

It is envisaged the results of this Report will be used to create an Asbestos Register for the site and allow planning for the site works to commence.

III. LIMITATIONS OF THE SURVEY & REFERENCES

A. LIMITATIONS

It should be noted that with all building surveys there are limitations and shortcomings of the inspection process. The following factors are relevant in the reporting of the survey results:-

A. Fundamental to the entire basis of an inspection of this type is the fact that no matter how thorough or professionally it is conducted, *not all* asbestos might be found and recorded. In other words, the extent of any asbestos survey is bound by the limits of partially destructive methods. Hence, the presence of asbestos-containing materials can therefore be reported only within the constraints of these methods.

B. Thus, whilst one can be reasonably confident that all asbestos-containing materials that might be *routinely* encountered in the normal day-to-day activities of the building can be identified and assessed, no guarantees can be made that a specific building or area is absolutely free of asbestos, since demolition activities may well reveal asbestos-containing materials in areas inaccessible to previous inspections.

C. The information presented in the report should only be used as *general* guidance for the purposes of recording locations and conditions of asbestos containing materials. It may be necessary to conduct destructive inspections of inaccessible areas if they are to be refurbished, gutted or demolished.

It should be noted that refurbishment and demolition activities may reveal ACM which were concealed due to inaccessibility at the time of inspection. If any suspicious ACM is found, works must cease and confirmation via asbestos identification analysis must be conducted.

B. REFERENCES

The following document has been used as a reference for this Report:-

- SafeWork Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace (hereafter, Code of Practice, Control)

These documents are available from available from the SafeWork Australia website at www.safeworkaustralia.gov.au

IV. SITE DESCRIPTION

The inspection area at the site comprises of the following types of structures:-

- Animal exhibits, holding yards and night houses/dens
- Animal food preparation kitchen
- Administration and staff amenities
- Public areas

V. ASBESTOS INSPECTION SURVEY - SCOPE OF WORKS

The scope of works was provided as follows for the inspection area:-

- Determine presence and record location and condition of ACM

A. INSPECTION SURVEY STRATEGY

The structures in the inspection area were inspected for ACM. Assistance was provided by Daniel Djikic and Keepers Meagan, and Lesley Small.

The current Asbestos Register for Taronga Zoo was utilised for the survey.

Using available information supplied to Pickford & Rhyder Consulting in conjunction with initiative, professional judgement and experience of the surveyor, the strategy for the survey was to inspect the buildings and structures systematically and methodically to determine locations of ACM. Both internal and external areas were inspected.

Every effort has been made to conduct and report results of this survey in a professional manner to allow comprehensive information regarding (confirmed and assumed) ACM location and condition to be recorded. The survey was carried out as a non-intrusive survey without demolition or significant damage to structures and in a safe manner to protect the surveyor.

B. ASBESTOS IDENTIFICATION ANALYSIS

Where necessary, samples of building materials were taken and examined by Stereomicroscopy and Polarized Light Microscopy (with Dispersion Staining) in accordance with AS 4964-2004: - 'Method for the qualitative identification of asbestos in bulk samples'.

For results of bulk asbestos identification analysis, refer to attached NATA[1] endorsed Certificate of Analysis (Appendix B).

The Certificate details are as follows:-

- 82472/77-ID, dated 27 February 2015.

The sample numbers from the Certificate of Analysis have been used in this Report.

C. GENERAL INFORMATION

The results of the inspection are reported in tabular format under various headings in the Asbestos Register Table. Information and codes used in each heading is provided below.

C.1. Primary and Secondary Location

For ease of identifying locations in the future, a primary (e.g. ground level or level 1) and secondary location has been included for reference.

C.2. Application

The application for the ACM (i.e. use of ACM) has been provided to assist in locating the particular material.

C.3. Material

The specific type of material used in that application has been provided.

C.4. ACM Type

Asbestos-containing materials are generally classified by the following terms:-

- *Friable* – which is in the form of powder or can be easily crumbled, pulverised or reduced to a powder by hand pressure when dry. Examples include pipe insulation and sprayed insulation materials.

[1] National Association of Testing Authorities

- *Non-Friable* – is any other material containing asbestos which is not friable asbestos. This includes bonded materials where the fibres are contained in a bonded matrix (e.g. asbestos-cement, vinyl floor tiles, zelemite electrical distribution boards); and materials such as gaskets, millboard, woven cloth and ropes.

C.5. Quantity

An approximate estimation of quantity has been provided in square metres (sqm).

The quantities provided are for information purposes only and should not be used for the function of preparing removal quotations.

C.6. Condition

Information on condition of each ACM is provided. Condition of the ACM is described as either:-

- *Stable* – The condition of the ACM is considered to be intact, i.e. no damaged edges or surfaces.

  Examples:-
  - Friable materials where the ACM is undamaged, not deteriorated and/or remains well encapsulated.
  - Non friable materials where the ACM has no cracks or broken edges, damage or degradation and/or the fibres are fully encapsulated within the parent material and/or matrices.

- *Damaged* – The ACM is considered to be damaged or degraded.

- *Unknown* – where the condition of the material could not be assessed due to inaccessibility/access for visual observation.

C.7. Asbestos Presence

Information is provided whether the material:-

- *Present*, i.e. the material contains asbestos. This is based on results of asbestos identification analysis or where materials are used in similar application/location and asbestos identification analysis indicated asbestos is present.
- *No Asbestos Detected (NAD)*, i.e. the material does not contain asbestos. This is based on results of asbestos identification analysis or where materials are used in similar application/location and asbestos identification analysis indicated asbestos is not present.
- *Assumed*, i.e. the material is assumed to contain asbestos based on visual observation and professional judgement where access for sampling/inspection was not possible, and/or where experience indicates a high probability for ACM.

Note: In accordance with the Code of Practice, Control where an assumption of ACM has been made the material must be treated as asbestos-containing until confirmation indicates otherwise.

C.8. Sample Information

Information on the source of the determination of asbestos presence, absence or assumed is provided.

Notes:-

- Pickford & Rhyder Consulting sample identification numbers have been included and the format for these numbers is 82XXX.
- Visual observation – the presence, absence or assumption is based on a visual observation of the material and application using professional judgement, initiative and knowledge of ACM used in building applications.

C.9. Risk Rating

The following risk ratings relate to the potential for ACM to generate airborne respirable[1] asbestos fibres.

- *High Risk* – Severely degraded or damaged ACM which may be easily disturbed and may lead to airborne asbestos fibres being liberated.
- *Medium Risk* – Damaged or degraded ACM which is stable or damaged and/or degraded ACM that may become unstable through disturbance, which may lead to airborne asbestos fibres being liberated.
- *Low Risk* – ACM which when left in situ and undisturbed is unlikely to release airborne respirable fibres.

C.10. Control

As a result of the inspection survey, there may be actions required to control the ACM. The recommended guidance provided for controls are listed below:-

- *No Action* – the ACM is stable in situ and action for removal can be deferred.
- *Encapsulate/seal* – the ACM requires encapsulation, sealing of broken or damaged edges or surface protection to prevent further damage or deterioration
- *Removal* – the ACM requires removal to prevent further damage and/or potential to liberate respirable fibres

C.11. Occupancy

For spaces where ACM is present, information regarding the occupancy of the space is provided. This information assists in assessing if the space is frequently used according to the following criteria:-

- *In use* – spaces which would be frequently accessed during normal use of the building, e.g. halls, rooms, balconies etc.
- *Not occupied* – spaces which are infrequently accessed, e.g. plant rooms, ceiling spaces, risers, electrical cupboards, roof spaces etc.

C.12. Accessibility

Information regarding accessibility to the ACM with respect to daily/routine access and potential for damage has been included based on the following criteria:-

- *Accessible (ACC)* – the ACM is visible and relatively easily accessible. Examples include walls, floors.

[1] Respirable asbestos fibres (i.e. fibres greater than five micrometres in length and not exceeding 3 micrometres in width), which are the type of fibre that can be hazardous when inhaled.

- *Inaccessible (INACC)* – the ACM may be:
    - visible yet inaccessible generally due to height, e.g. eaves, or
    - partially visible based on use or location, e.g. mastic on air conditioning ducts, seals, gaskets, or
    - not visible due to cupboard/door/panel, e.g. electrical distribution boards within electrical cabinets, or
    - restricted by access, e.g. keyed access to cupboard, room, roof space etc. or live electrical equipment

C.13. Labelling

It is important all ACM is labelled. For the table, the following code is used:-

- A – Label affixed to the ACM
- LNA – Label not affixed (public area)

All ACM (either confirmed or assumed) must be labelled if reasonably practicable.

Additional information regarding labelling requirements for ACM are provided in Section IX, G of this Report.

C.14. Photograph ID

The reference number for photographs is provided. Photographs of building materials are located in Appendix A of this Report.

C.15. Additional Information

The following notes are provided regarding results and information in the Asbestos Register Table:-

- Fibre cement sheet refers to compressed or fibrous cement sheeting which may or may not contain asbestos (i.e. asbestos cement (AC)). Analytical results indicate if asbestos was identified in the fibre cement.

VI. INSPECTION RESULTS

Primary Location	Secondary Location	Application	Material	ACM Type	Quantity (sqm)	Condition	ACM Status	Risk Rating	Occupancy	Accessibility	Control	Labelling	Sample ID	Photo ID	Comment
Fennec fox	back of house area, including breeding areas													no photo	area inspected no ACM found.
Fennec fox	electrical distribution board	mounting board	mounting board				NAD						visual inspection	1	
Dhole exhibit	back of house area, including breeding areas													no photo	area inspected no ACM found.
Tapir	back of house area, including holding areas													no photo	area inspected no ACM found.
Tapir	electrical distribution board (back of house)	mounting board	mounting board				NAD						visual inspection	2	
Tapir	electrical box, front of exhibit	mounting board	mounting board				NAD						visual inspection	3	whilst access inside was not available, no ACM suspected
Malaysian Tapir	pond & sump pit	formwork	formwork				assumed						visual inspection	4	no access. Buried ACM may be found during demolition
Meerkat	back of house area, including breeding areas													no photo	area inspected no ACM found.
Snow leopard	electrical alcove, south side of exhibit	ceiling lining	fibre cement				NAD						82473	5	
Snow leopard	entrance to back of house area	ceiling lining	fibre cement				NAD						82474	6	note: 2 types of ceiling material, both were NAD
Snow leopard	electrical distribution boards	mounting board	mounting board				NAD						visual inspection	7	
Snow leopard	corridor between gate & dens	ceiling lining	fibre cement				NAD						visual inspection	no photo	based on results of 82474

For full description of each heading, refer to Section V; F=Friable, NF=Non Friable, NAD=no asbestos detected; A=label affixed, R=label required

Primary Location	Secondary Location	Application	Material	ACM Type	Quantity (sqm)	Condition	ACM Status	Risk Rating	Occupancy	Accessibility	Control	Labelling	Sample ID	Photo ID	Comment
Lions & Tigers	lions den service area and dens	ceiling lining	plasterboard				NAD						visual inspection	8	photo location: ecx 003 ceiling
Lions & Tigers	ecx 005, den foyer, green ceiling	ceiling lining	fibre cement				NAD						82475	9	
Sun bear	bear dens D&E & adjacent corridor	ceiling lining	plasterboard				NAD						visual inspection	10	
Sun bear	electrical distribution board KB	mounting board	mounting board				NAD						visual inspection	11	
Sun bear	ecx 007/8, dens A, B, C: ecx 006, den B	ceiling lining	plasterboard				NAD						visual inspection	12	photo location: ecx 006 (B)
Cat & bear exhibits building	staff amenities lobby, hot water heater base	fibre cement	fibre cement				NAD						82476	13	
Cat & bear exhibits building	staff amenities shower room	wall linings	fibre cement				NAD						82747	14	
Cat & bear exhibits building	staff amenities, toilet	wall linings	fibre cement				NAD						visual inspection	no photo	based on results of 82477
Cat & bear exhibits building	staff offices & balcony						NAD						visual inspection	no photo	area inspected no ACM found.
Cat & bear exhibits building	sub floor areas						NAD						visual inspection	no photo	sub floor areas inspected underneath the building, no ACM found
Cat exhibits public area	electrical distribution board, rear ecx 004	mounting board	mounting board				NAD						visual inspection	15	

For full description of each heading, refer to Section V; F=Friable, NF=Non Friable, NAD=no asbestos detected; A=label affixed, R=label required

VII. ADDITIONAL INFORMATION

A. INACCESSIBLE ACM

There may be ACM in the inspection areas which was not visible or accessible during the inspection. This includes ACM which may have been used as formwork for concrete structures (e.g. ponds, sumps, building footings, etc.) or buried pipes (e.g. sewerage, drainage).

Soil disturbance activities and excavations conducted as part of the planned site works may reveal ACM, therefore it is important persons conducting this work are aware of the potential to unearth ACM and that suitable precautions may be required.

If ACM is found it requires removal as asbestos waste, with suitable precautions in place and disposal to a site lawfully able to accept such waste.

B. EXHIBIT AREAS

The inspection did not include all exhibit areas due to animal occupancy, e.g. tigers.

Where exhibits were inspected (e.g. dhole), no ACM is suspected. In exhibits not inspected, ACM is not suspected.

Where mock rock is present it is unlikely construction materials (e.g. concrete and wire) contain asbestos, however formwork at ground level may contain asbestos-cement.

C. ASBESTOS MANAGEMENT PLAN

It is important management of ACM at the site is carried out in accordance with the Taronga Conservation Society Asbestos Management Plan (AMP).

The AMP has been prepared in accordance with the NSW Work Health & Safety Legislation (2011) and Code of Practice, Control requirements.

The AMP is a policy and procedures document for the Organisation which sets out how ACM on their sites is managed.

The AMP caters for ACM in structures and where buried on site.

Pickford & Rhyder Consulting can provide further assistance as required with asbestos related matters.

APPENDIX A

PHOTOGRAPHS

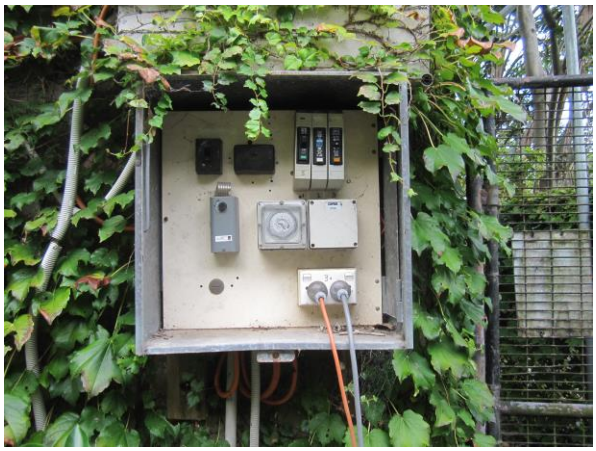

Photo 1: Fennec fox, electrical distribution board

Photo 2: Tapir, electrical distribution board

Photo 3: Tapir, front of house electrical box

Photo 4: Malaysian Tapir waterhole and sump

Photo 5: Snow Leopard, electrical alcove, south side of exhibit, ceiling

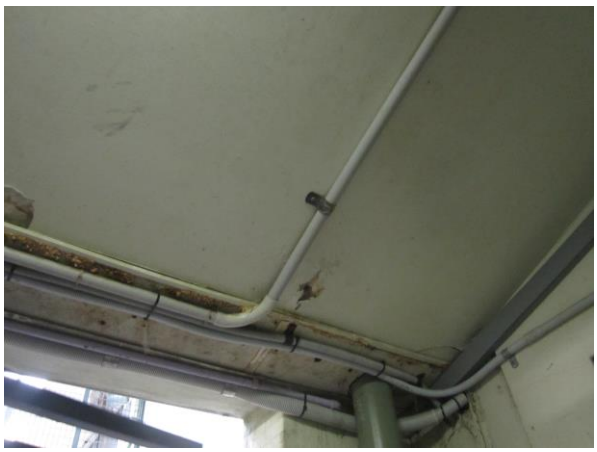

Photo 6: Snow Leopard, entrance to back of house area, ceiling

Photo 7: Snow Leopard, electrical distribution boards

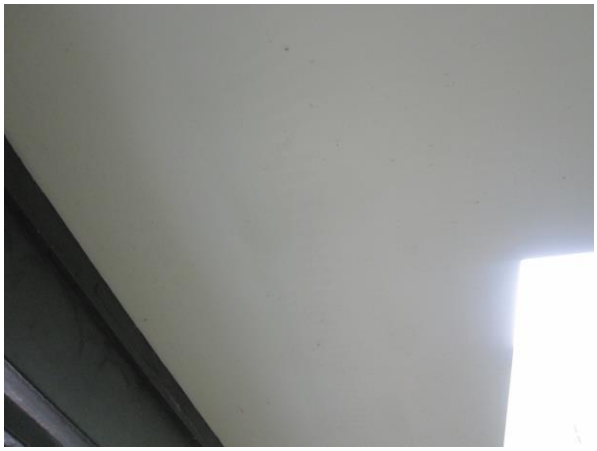

Photo 8: Lion den service area & dens, ceiling

Photo 9: Ecx 005 den foyer, ceiling

Photo 10: Sun bear dens D&E, ceiling

Photo 11: Sun bear, electrical distribution board

Photo 12: Ecx 006 (B), ceiling

Photo 13: Staff amenities, hot water heater base

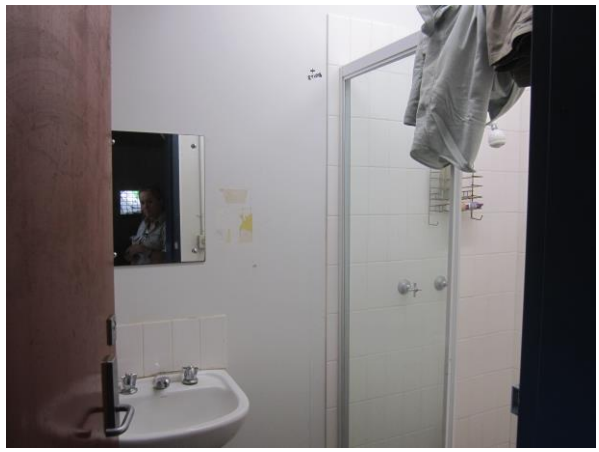

Photo 14: Staff amenities, shower walls

Photo 15: Rear ecx 004, electrical distribution board

APPENDIX B

CERTIFICATE OF ANALYSIS

PICKFORD & RHYDER CONSULTING PTY LTD
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27 February 2015

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Project Manager
Capital Works, Infrastructure & Operations
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CERTIFICATE OF ANALYSIS – ASBESTOS IDENTIFICATION

YOUR REFERENCE/JOB No: 4500146125
TYPE OF SAMPLES: Bulk samples - as sampled by L. Apthorpe
SITE LOCATION: Taronga Zoo, Proposed New Sumatran Tiger Adventure
DATE SAMPLED: 26 February 2015 **DATE RECEIVED:** 26 February 2015
DATE ANALYSED: 26 February 2015 **OUR REFERENCE:** 82473/77-ID

TEST METHOD: Bulk materials examined by Stereomicroscopy and Polarized Light Microscopy (with Dispersion Staining) in accordance with AS 4964-2004: - 'Method for the qualitative identification of asbestos in bulk samples' as outlined in Laboratory Method ID/1.

Sample No	*Lab No*	*Sample Information*	*Analysis Result*	*Description*
1	82473	Snow Leopard Exhibit, electrical alcove, south side of exhibit, ceiling	No asbestos detected	The sample was a grey fibre-cement, of approximate weight <1 g, in which organic fibres were detected. No asbestos fibres were detected in the sample.
2	82474	Snow Leopard Exhibit, entrance to back of house area, ceiling, (A) small ceiling section on right hand side, (B) main section of ceiling	No asbestos detected	The sample was (A) a damp, dark grey, crumbly material and (B) a grey, crumbly material, of total approximate weight 3 g. No asbestos fibres were detected in parts (A) or (B) of the sample.

Analysed and reported by:

L. Apthorpe,
Approved Identifier and Signatory

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

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Accreditation number 2515

Sample No	*Lab No*	*Sample Information*	*Analysis Result*	*Description*
3	82475	ECX 005 den foyer ceiling (green)	No asbestos detected	The sample was a grey fibre-cement with a green coating on one surface, of approximate weight <1 g, in which organic fibres were detected. No asbestos fibres were detected in the sample.
4	82476	Amenities Lobby, base under hot water heater	No asbestos detected	The sample was a grey fibre-cement, of approximate weight <1 g, in which organic fibres were detected. No asbestos fibres were detected in the sample.
5	82477	Shower Room, wall sheeting	No asbestos detected	The sample was a grey fibre-cement, with a white coating on one surface, of approximate weight <1 g, in which organic fibres were detected. No asbestos fibres were detected in the sample.

Sampling is not covered by the scope of accreditation.