NSW Police Force C/- Brookfield Global Integrated Solutions

# NSW Police Force Hazardous Materials Surveys

## Taree Police Station and Demountables
## 83 Albert Street, Taree NSW 2430

Date of Inspection: 2 November 2016
Date of Issue: 2 February 2018


WSP | PARSONS BRINCKERHOFF

## Document information

Client: NSW Police Force C/- Brookfield Global Integrated Solutions
Title: NSW Police Force Hazardous Materials Surveys
Subtitle: Taree Police Station and Demountables
83 Albert Street, Taree NSW 2430
Document No: 0326_HBMR_02022018
Date of Inspection: 2 November 2016
Date of Issue: 2 February 2018

| Rev | Date | Details |
|---|---|---|
| 01 | 20/06/2017 | 1st issue |
| 02 | 02/02/2018 | 2nd issue |

## Author, Reviewer and Approver details

| | | | |
|---|---|---|---|
| Prepared by: | Shevan Mahamad | Date: 16/06/2017 | Signature:  |
| Reviewed by: | Prasanna Pichai | Date: 23/01/2018 | Signature:  |
| Approved by: | Joshua Trahair | Date: 30/01/2018 | Signature:  |

## Distribution

NSW Police Force C/- Brookfield Global Integrated Solutions, WSP | Parsons Brinckerhoff file, WSP | Parsons Brinckerhoff Library



## Document owner

Parsons Brinckerhoff Australia Pty Limited

*ABN 80 078 004 798*

Level 27 Ernst & Young Centre
680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001
Australia
Tel: +61 2 9272 5100
Fax: +61 2 9272 5101
www.pbworld.com

*Certified to ISO 9001, ISO 14001, OHSAS 18001*

# Contents

**Page number**

# List of tables



# List of appendices

# Glossary

| Acronym | Definition |
|---|---|
| A | Amosite asbestos (brown asbestos) |
| AC | Asbestos cement (asbestos-containing fibrous cement material) |
| ACM | Asbestos-containing material |
| AS 1319 | Standards Association of Australia, Rules for the Design and Use of Safety Signs for the Occupational Environment |
| AS 1715 | Standards Association of Australia, Selection, Use and Maintenance of Respiratory Protective Devices |
| AS 1716 | Standards Association of Australia, Respiratory Protective Devices |
| C | Crocidolite asbestos (blue asbestos) |
| CH | Chrysotile asbestos (white asbestos) |
| FC | Fibre cement (usually sheeting) |
| NAD | No asbestos detected |
| NATA | National Association of Testing Authorities, Australia |
| NOHSC | National Occupational Health and Safety Commission |
| ODS | Oxygen Depleting Substances |
| PCB | Polychlorinated biphenyls |
| PPE | Personal protective equipment |
| RPE | Respiratory protective equipment |
| SMF | Synthetic mineral fibre |
| WH&S | Workplace health and safety |

# 1. Introduction

WSP | Parsons Brinckerhoff was commissioned by Brookfield Global Integrated Services (BGIS) to undertake Hazardous Materials Re-surveys of properties within the New South Wales Police Force (NSWPF) property portfolio. This report outlines the findings of the re-survey of Taree Police Station and Demountables – 83 Albert Street, Taree NSW 2120, undertaken by Shevan Mahamad (Occupational Hygiene Consultant) on the 2nd of November, 2016.

For the purpose of this report the term hazardous materials (HAZMAT) refers to the following:

- Asbestos containing materials (ACM)
- Lead based paints
- Synthetic mineral fibre (SMF) material
- Light fittings and accessible electrics that may contain polychlorinated biphenyls (PCB) capacitors.
- Ozone depleting substances (ODS)

A complete list of the in-situ and suspected HAZMATs identified during the resurvey, including details about the condition and the risk posed by each situation has been provided in the hazardous materials register, photographs, certificates of analysis and site plan attached as Appendices A to D.

No one section or part of a section of this report should be taken as giving an overall idea of this report. Each section must be read in conjunction with the whole of this report, including the hazardous materials register and sample results.

## 1.1 Legislative Requirements

The resurvey works and production of this report have been undertaken in accordance with the requirements of the following documents:

- Work Health and Safety Act 2011 (Commonwealth)
- Work Health and Safety Act 2011 (NSW)
- Work Health and Safety Regulation 2011 (NSW)
- Safe Work Australia: How to Manage and Control Asbestos in the Workplace: Code of Practice 2016.
- Safe Work Australia: How to Safely Remove Asbestos: Code of Practice 2016.
- Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres. 2nd Edition [NOHSC:3003(2005)]
- ANZECC (1997) Identification of PCB-containing Capacitors: An information booklet for Electricians and Electrical Contractors.
- AS 1319, Standards Association of Australia, Rules for the Design and Use of Safety Signs for the Occupational Environment
- AS 1715, Standards Association of Australia, Selection, Use and Maintenance of Respiratory Protective Devices
- AS 1716, Standards Association of Australia, Respiratory Protective Devices
- AS 2601 Demolition of Structures

- AS 4361.1 Guide to Lead Paint Management, Part 1: Industrial Application 1995
- AS 4361.2 Guide to Lead Paint Management, Part 2: Residential and Commercial Buildings 1998
- National Code of Practice for the Control and Safe Use of Inorganic Lead at Work [NOHSC:2015(1994)].
- AIOH positional paper: Synthetic Mineral Fibres and Occupational Health Issues 2011
- NOHSC (1989b). Guidance Note on the Membrane Filter Method for the Estimation of Airborne Synthetic Mineral Fibres. [NOHSC:3006 (1989)] June 1989
- National Standard for Synthetic Mineral Fibres [NOSHC:1004 (1990)].
- National Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOSHC:2006 (1990)].
- AS 3640 Workplace atmospheres - Methods for sampling and gravimetric determination of inhalable dust 2009
- NSW Protection of the Environment Operations Act 1997.

## 1.2 Scope of Services

The objectives of the hazardous material survey were to:

- Undertake a resurvey of the site to identify and assess hazardous materials
- Assessment of HAZMAT previously identified in the supplied HAZMAT register
- Undertake an initial HAZMAT survey of the site where a previous HAZMAT register is not available
- Visual assessment of suspect HAZMAT including screening of lead based paint using a hand held XRF analyser (XRF)
- Sampling of representative materials suspected of containing asbestos or lead
- Perform a risk assessment of HAZMAT identified in accordance with the NSWPF adopted HAZMAT risk assessment descriptors and ratings
- Update the existing or prepare a new HAZMAT Register for the site
- Provide a semi-quantitative risk assessment of the HAZMAT identified
- Provide recommendations for the management of HAZMAT identified.

## 1.3 WSP|PB Approach

BGIS provided WSP|PB with the current asbestos and hazardous building materials registers for Taree Police Station and Demountables. It should be noted that WSP|PB has inspected the sites using data supplied from the survey carried out by GHD in 2012 and subsequent reinspections. WSP|PB can provide no assurances on the accuracy of previous sampling regimes and analysis results.

# 2. Resurvey Methodology

## 2.1 HAZMAT Register Review

Where available the existing HAZMAT register was supplied for the site. Where a previous HAZMAT survey had not been performed WSP | Parsons Brinckerhoff surveyors developed a register through an initial HAZMAT survey of the site. All amendments to the original register including updated risk assessment, location description and new HAZMAT identified are denoted by red colour text.

## 2.2 Site Inspection

The identification of hazardous materials involves a combination of visual inspection of the accessible areas of the building/structure and the collection of representative samples of the suspect materials for the purpose of analytical confirmation. Where identical suspect materials are detected at different locations, visual confirmation only may have been made rather than additional sample collection.

Access was made only where safe access by solid floors, decking, walkways, protected catwalks or ladders was available. Minimal to no disturbance of any equipment was undertaken as part of the survey as all plant, electrical installations, pipe-work and associated equipment were considered live at the time of the survey.

Access through the buildings and structures on the site was made by systematic walkthrough.

## 2.3 Identification of Material

### 2.3.1 Asbestos containing materials (ACMs)

Representative samples of materials suspected to contain asbestos were collected and analysed at WSP Parsons Brinckerhoff NATA Accredited Laboratory. The identification of asbestos fibres was based on using Polarised Light Microscopy supplemented with Dispersion Staining techniques. This is detailed in Australian Standard 4964-2004 ‘Method for the qualitative identification of asbestos in bulk samples’. Asbestos samples were only collected for analysis where the safety of personnel would not be compromised. Sampling was conducted in accordance with the WSP | Parsons Brinckerhoff’s in house survey guide, Safework Australia’s Code of Practice, ‘How to Manage and Control Asbestos in the Workplace’ and the United Kingdom Health & Safety Executive publication, ‘HSG 264: Asbestos: The survey guide’.

### 2.3.2 Lead-based paint

Painted surfaces were screened using a hand help XRF analyser to provide a concentration of the surface paint layer. Where XRF screening indicated a concentration of lead greater than 10,000 parts per million (1.0 % w/w) and flaking was observed, additional sampling of the suspect paint layer was undertaken.

Representative samples of paint were analysed at Envirolab Services NATA Accredited Laboratory. Laboratory analysis of lead based paints is used to achieve a reportable weight by weight percentage of lead throughout the paint layers and is reported against AS 4361.-1998 Guide to lead Paint Management, Part 2: Commercial and Residential Buildings lead containing paint system level of 1.0 per cent (w/w) of the dried film.

Sampling was conducted in accordance with the WSP | Parsons Brinckerhoff’s in house survey guide and AS 4361.2-1998 Guide to lead Paint Management, Part 2: Commercial and Residential Buildings.

Sampling methodology will take into account the various paint coats and record these layers accordingly, these observations will be referred to alongside the analytical sample results to acknowledge that lead paint layers of varying lead content will affect the analytically observed lead weight concentration recorded from the sample. To this end, where multiple lead paint layers have been visually recorded but analytically determined lead percentage of the collective paint layers is below actionable limits, the paint undercoats may still be determined as hazardous due to its dilution in the sample by the non-lead topcoats. Sampling methodology may also consist of the use of a lead paint chemical colorimetric test reagent that can provide an instantaneous result of lead presence within specific layers. This testing will however be used in conjunction with a physical sample to determine the lead concentration as above.

### 2.3.3 Synthetic mineral fibres (SMF) materials

Our experienced surveyors visually identified and recorded the presence of synthetic mineral fibre products onsite. Where required representative samples of suspect SMF were collected and analysed at WSP Parsons Brinckerhoff NATA Accredited Laboratory.

### 2.3.4 Polychlorinated biphenyls (PCBs)

Where access was available and power was isolated representative examples of each major type of fluorescent light fittings were examined to determine which lights were fitted with PCB containing ballast capacitors. The details of the brand, model of each capacitor and capacity were recorded and checked against with the ANZECC database of known PCB capacitors and PCB free capacitors. Where safe access was not possible, external components of each fluorescent light fitting were visually assessed by our experience surveyor's onsite.

The Australian and New Zealand Environment Conservation Council 'Polychlorinated Biphenyls Management Plan, November 1996' outlines the National Strategy for the management of PCBs.

The document defines PCB materials and wastes as follows:

**Table 2.1 PCB concentration classification**

| PCB concentration | Waste classification |
|---|---|
| <2 mg/kg | - PCB free. |
| 2 mg/kg - <50 mg/kg | - Non-Scheduled PCB material or waste. |
| >50 mg/kg | - Scheduled PCB material or waste. |
| >100,000 mg/kg (10%) | - Concentrated PCB material. |

### 2.3.5 Ozone depleting substances (ODS)

The identification of potentially ODS-containing items, such as industrial refrigerators and air conditioning units, were not included in the scope of services of this resurvey. Where ODS-containing items have been previously identified at the site they have been included in the updated HAZMAT register.

# 3. Site Description

The site is located at Taree Police Station and Demountables – 83 Albert Street, Taree NSW 2120. The survey was restricted to buildings owned and managed by NSWPF. Details of the buildings are presented below:

**Table 3.1 Building descriptions**

| Building | Building description |
|---|---|
| **Taree Police Station** | Single story brick structure, pitched tile roof. Plasterboard, concrete and fibre cement sheet interior wall and ceiling linings. Carpet, broadsheet vinyl and concrete floor linings throughout. |
| **Highway Patrol Office** | Single story brick structure, pitched tile roof. Plasterboard, concrete and fibre cement sheet interior wall and ceiling linings. Carpet, broadsheet vinyl and concrete floor linings throughout. |
| **Exhibits** | Single storey Structure. |
| **Detectives office** | Single storey Structure. |
| **Training room** | Single storey Structure. |

## 3.1 Survey Restrictions

The resurvey was limited to the buildings listed above. The resurvey was not fully intrusive and therefore certain areas were not accessible including:

- areas of height deemed not safely accessible via a risk assessment in accordance with the SafeWork NSW Code of Practice: Managing the risk of falls at workplaces, July 2015
- confined spaces as defined within the SafeWork NSW Code of Practice: Confined Spaces, February 2016
- all areas below ground or soil surfaces
- within air conditioning units and ductwork
- internal wall cavities
- internal subfloor cavities
- electrical equipment
- ceiling space – height restricted

# 4. Hazardous Materials Risk Assessment Descriptors and Ratings

The descriptors in the following tables were used by Coffey Environments and subsequent consultants in order to assess the risk associated with the identified HAZMAT during the last site inspection.

In order to avoid inconsistencies with any potential overarching Hazardous Building Materials Management Plans that may exist, the same descriptors have been adopted in order to assess the risks for each identified hazardous building material and hence, the recommended risk management controls. For the purpose of this resurvey WSP | Parsons Brinckerhoff have adopted the NSWPF approved descriptors outlined in the following tables.

For full details of the locations, analysis results, condition, accessibility and risks associated with the identified HAZMATs, please refer to the attached Hazardous Buildings Materials Register.

## 4.1 Asbestos

**Table 4.1 Friable descriptors**

| Item | Score | Description |
|---|---|---|
| Friable | Y | Asbestos cement debris, or material which when dry may become crumbled, pulverised or reduced to powder by hand pressure. |
| | N | Bonded i.e. non-friable material |

**Table 4.2 Material assessment descriptors**

| Item | Score | Description |
|---|---|---|
| Asbestos Type | 0 | No asbestos |
| | 1 | Chrysotile only |
| | 2 | Amphibole asbestos (excluding crocidolite) |
| | 3 | Crocidolite |
| Product type | 0 | No asbestos detected |
| | 1 | Bonded asbestos in good condition |
| | 2 | Friable asbestos in good condition or cement in poor condition |
| | 3 | Friable asbestos in poor condition |
| Extent of Damage | 0 | No visible damage |
| | 1 | Minor scratches or mark, broken edges |

| Item | Score | Description |
|---|---|---|
| | 2 | Significant breakage, many small areas of damage to friable material |
| | 3 | High damage, visible debris |
| Surface Treatment | 0 | Bonded Asbestos including encapsulated asbestos cement |
| | 1 | Enclosed laggings, sprays and boards or bare cement |
| | 2 | Bare board or encapsulated lagging/spray or cement debris |
| | 3 | Unsealed lagging/spray |

**Table 4.3 Location assessment descriptors**

| Item | Score | Description |
|---|---|---|
| Occupant Activity | 0 | Rare disturbance, e.g. little used store room |
| | 1 | Low disturbance, e.g. Office type activity |
| | 2 | Periodic disturbance, e.g. industrial or vehicular activity which may contact ACMs |
| | 3 | High levels of disturbance e.g. fire door with AIB sheet in constant use |
| Likelihood of Disturbance | 0 | Usually inaccessible or unlikely to be disturbed |
| | 1 | Minimal likelihood for disturbance |
| | 2 | Likely disturbance |
| | 3 | Frequent disturbance |
| Human Exposure Potential | 0 | Infrequent |
| | 1 | Monthly |
| | 2 | Weekly |
| | 3 | Daily |
| Maintenance Activity | 0 | Minor disturbance (e.g. possibility of contact when gaining access) |
| | 1 | Low Disturbance (e.g. changing light bulbs in asbestos insulating board (AIB) ceiling). |
| | 2 | Medium disturbance (e.g. lifting one or two ceiling tiles to access a valve) |
| | 3 | High level of disturbance (e.g. moving a number of AIB ceiling tiles to replace a valve or for re-cabling) |

The asbestos containing material risk score is a quantitative assessment determined by the sum of the scores based on the Materials and Location Assessments; i.e. Risk score = Material Score + Location Score (out of as possible 24).

Should no asbestos be detected then the register will indicate a risk score of 0.

**Table 4.4 Asbestos risk score descriptors**

| Item | Score | Description |
|---|---|---|
| Risk | 0 – 6 | Very Low Risk |
| | 7 – 12 | Low Risk |
| | 13 – 18 | Medium Risk |
| | 19 – 24 | High Risk |

## 4.2 Other Hazardous Building Materials

Other hazardous building materials, with the exception of asbestos.

**Table 4.5 Friability descriptors**

| Item | Score | Description |
|---|---|---|
| Friable | Y | Unsealed SMF |
| | N | Sealed SMF |
| | NA | Applicable to Ozone Depleting Substances, PCB, Lead in paint |

**Table 4.6 Material assessment descriptors**

| Item | Score | Description |
|---|---|---|
| Extent of Damage | G | Good condition |
| | Av | Average condition |
| | P | Poor condition |
| Surface Treatment | Y | Sealed |
| | P | Part sealed |
| | N | Not sealed |

**Table 4.7 Location assessment descriptors**

| Item | Score | Description |
|---|---|---|
| Occupant Activity | H | High traffic area |
| | M | Medium traffic area |
| | L | Low traffic area |

The other hazardous building materials risk score is a qualitative assessment determined by the combination of Material and Location Assessments. Depending on the material one or all of these criteria may be used in assessing the recommended Action.

**Table 4.8 Other hazardous building materials risk score descriptors**

| Item | Score | Description |
|---|---|---|
| Risk Score | L | Low exposure risk |
| | M | Medium exposure risk |
| | H | High exposure risk |

## 4.3 Recommended Risk Controls

In accordance with the previous hazardous materials building reports WSP PB has adopted the same recommended risk controls as those documented during the last inspection.

Following the assessment for both asbestos containing and other hazardous building materials an action score is assigned. The action score will be assigned according to the surveyor's assessment of the situation.

**Table 4.9 Recommended risk controls - actions**

| Descriptor | Item | Action |
|---|---|---|
| **A1** | Action 1 | Restrict access and remove |
| | | As a guide, the material conforms to one, or more, of the following: |
| | | Friable or poorly bonded to substrate, located in accessible areas; |
| | | Severely water damaged, or unstable; |
| | | Further damage or deterioration likely; |
| | | Friable asbestos material located in air conditioning ducting; |
| | | Asbestos debris and stored asbestos in reasonably accessible areas; |
| | | Significant peeling and Flaking Lead Paint in areas that pose immediate risk to children/resident. Removal considered lead risk work. |
| **A2** | Action 2 | Enclose, encapsulate or seal by licensed contractors |
| | | Reinspect Periodically |
| | | As a guide, the material conforms to one, or more, of the following: |
| | | Damaged material; |
| | | In reasonably accessible area; |
| | | Friable material or poorly bonded to substrate, with bonding achievable; |
| | | Possibility of disturbance through contact; |
| | | Possibility of deterioration caused by weathering; |
| | | Large areas of peeling and flaking lead paint in an area that poses high risk. Removal considered lead risk work. |
| **A3** | Action 3 | Remove during refurbishment or maintenance |
| | | Enclose, encapsulate or seal by general maintenance contractors |
| | | Reinspect Periodically |
| | | As a guide, the material conforms to one, or more, of the following: |

| Descriptor | Item | Action |
|---|---|---|
| | | Asbestos debris or stored material in rarely accessed areas;<br>Further disturbance or damage unlikely other than during maintenance or service;<br>Readily visible for further assessment;<br>Asbestos friction materials, gaskets and brake linings;<br>Small/moderate areas of peeling and flaking lead paint in an area that poses low risk. Remedial works suitable by a general maintenance contractor. |
| **A4** | Action 4 | No remedial action – Reinspect Periodically |
| | | As a guide, the material conforms to one, or more, of the following:<br>Firmly bonded to substrate and readily visible for inspection;<br>Inaccessible and fully contained;<br>Stable and damage unlikely. |

# 5. Statement of limitations

## 5.1 Scope of Services

This hazardous materials control plan ('the report') has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and WSP | Parsons Brinckerhoff ('scope of services'). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

## 5.2 Reliance on Data

In preparing the report, WSP | Parsons Brinckerhoff has relied upon data, surveys, analyses, designs, plans and other information including the HAZMAT register for the site provided by the Client, most of which are referred to in the report ('the data'). Except as otherwise stated in the report, WSP | Parsons Brinckerhoff has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ('conclusions') are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. WSP | Parsons Brinckerhoff will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WSP | Parsons Brinckerhoff.

## 5.3 Environmental Conclusions

The conclusions are based upon the data and visual observations and are therefore merely indicative of the environmental condition of the site at the time of preparing the report, including the presence or otherwise of contaminants or emissions.

Within the limitations imposed by the scope of services, the assessment of the site and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

## 5.4 Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. WSP | Parsons Brinckerhoff assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of WSP | Parsons Brinckerhoff or for any loss or damage suffered by any other party in relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

## 5.5 Other Limitations

WSP | Parsons Brinckerhoff will not be liable to update or revise the report to take into account any events, emergent circumstances or facts occurring or becoming apparent after the date of the report.

The scope of services did not include any assessment of the title to nor ownership of the properties, buildings and structures referred to in the report, nor the application or interpretation of laws in the jurisdiction in which those properties, buildings and structures are located.

# 6. Findings and Recommendations

## 6.1 Site Specific Issues

For information about site specific issues, please refer to the comments section of the HAZMAT register in Appendix A.

## 6.2 Additional Precautionary Testing

If suspected hazardous building materials are encountered during, maintenance, refurbishment or demolition (but are not listed in the asset register), it is recommended to undertake additional precautionary testing. In particular, the following testing should be included:

- Any fibrous or otherwise suspect cement building materials observed on the Site, and not identified in the HAZMAT Register, should be treated as asbestos-cement material or sampled and analysed for asbestos fibres;
- Any bituminous water proofing membranes not identified in the asset asbestos register should be treated as asbestos containing materials or sampled and analysed for asbestos fibres;
- Any building containing old vinyl floor tiles or sheeting that is to be demolished or if the vinyl flooring in these assets is to be removed and upgraded, it is recommended that a sample of the vinyl flooring be collected and analysed for asbestos, particularly the vinyl flooring that is not identified in the asset's asbestos register. This is required to assess disposal options for the vinyl; and
- Any other material suspected of being a hazard to health, or not specifically listed within the Hazardous Building Materials Registers, should be sampled and analysed prior to any refurbishment, demolition, or other activity with potential to disturb the material.

## 6.3 Planning of Maintenance, Refurbishment or Demolition Works

With respect to any known or potential hazardous building material, the planning of maintenance, refurbishment or demolition works associated with any asset needs to be undertaken carefully. It should include consideration of the following:

- Requirements of the overarching Hazardous Building Materials Management Plan or similar;
- Recognition that any identified hazardous building material is the minimum amount of material present;
- Subsequent recognition that the scope and limitations of prior hazardous building material survey(s) may result in additional unidentified hazardous materials being present. This may require works to;
    - Address known information gaps, such as surveying any previously inaccessible rooms and assuming that asbestos may be present in other areas not generally accessed by previous survey(s), such as wall and ceiling cavities;

- Project team undertaking an HAZMAT risk analysis and incorporating suitable provisions into contract/specifications; and
- Consider directing the Contractor to undertake an independent HAZMAT survey of the work area (may use existing information) that then adds an additional layer of assurance as well as minimising potential Contractor time and cost variations as works progress.

***Prior to demolition or refurbishment all hazardous materials likely to be disturbed by those works should be removed.***

## 6.4 Maintenance of the Hazardous Building Materials Registers

Maintenance of the HAZMAT register is required so that it remains current and any contractors can rely upon it as an accurate representation of HAZMATs present at each asset. In order to continually improve the completeness and accuracy of the HAZMAT register, it is recommended that:

- Action and document the HAZMAT management recommendations made within the registers, particularly where an elevated risk is present with a corresponding recommended timeframe of 12 months or less;
- Add entries related to precautionary testing, if conducted;
- Undertake surveys to determine the presence of HAZMAT in spaces or assets that were not accessible or may not be listed on the HAZMAT register;
- Record the removal or demolition of assets containing HAZMAT;
- Undertake an HAZMAT re-survey once every year (or as otherwise required) to maintain the register and review the level of risk assigned to the particular instance of HAZMAT;
- Record removal and maintenance of HAZMAT; and
- Distribute or otherwise make available all HAZMAT surveys, registers or other relevant information to all employees, visitors, contractors and maintenance people or companies with potential to disturb or work with known or potential asbestos materials.

## 6.5 Suspect Materials or Further Advice

Should suspect materials be identified that are not identified within the HAZMAT Registers or supporting systems, then the material should be sampled and analysed for the suspected hazard. If applicable, any associated works with potential to disturb the material are to cease and the area made safe. If the suspect material has already been disturbed, then the overarching provisions of the Hazardous Building Materials Management Plan or similar is to be followed, including advice sought from a suitably qualified and experienced professional.

If in doubt or unsure of any issue involving known, potential or suspect hazardous materials then works should cease and advice sought.

## 6.6 Hazardous Materials Management Plan

Refer to the Hazardous Materials Management Plan for the NSW Police Force Management Practices.

# Appendix A

Hazardous Materials Register

| Hazard | Sample No | Result | Photo ID | Description of Hazardous Material | Location of Hazardous Material | Quantity (m, m2, m3) | Friable | Asbestos type | Product Type | Extent of Damage | Surface Treatment | Occupant Activity | Likelihood of Disturbance | Exposure Potential | Maintenance Activity | Risk Score | WSP\|PB 2016 Reinspection Action Score | Consultant Comments | Remediation Date (where applicable) | Remediation Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Taree Police Station** | | | | | | | | | | | | | | | | | | | | |
| **Asbestos Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Asbestos | MAN-TAR-PS-3 | CH | 1 | Compressed fibre cement sheeting | Prosecutors block and Female toilet block, partition wall to toilet cubicle | 3m² | N | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 0 | 9 | A3 | WSP\|PB 2016: Monitor condition, consider removal or encapsulation, reinspect periodically. | | |
| Asbestos | AG675 | CH | 2 | Asbestos cement sheeting wall partition | Female toilet and shower block; Interior, toilet | 2m² | N | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 7 | A3 | WSP\|PB 2016: Monitor condition, consider removal or encapsulation, reinspect periodically. | | |
| Asbestos | MAN-TAR-PS-1 | CH | 3 | Fibre cement panel | Prosecutors Block; Exterior, wall panels below windows | 6m² | N | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 4 | A4 | WSP\|PB 2016: Item in good condition, leave, maintain and monitor condition | | |
| Asbestos | MAN-TAR-PS-4 | CH | | Fibre cement lining | Prosecutors block; Exterior, all faces | 50m² | N | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | A4 | WSP\|PB 2016: Item in good condition, leave, maintain and monitor condition | | |
| Asbestos | Refer to MAN-TAR-PS-1 | CH | | Fibre cement panel | Prosecutors Block; Interior, wall panels below windows | 6m² | N | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 4 | A4 | WSP\|PB 2016: Item in good condition, leave, maintain and monitor condition | | |
| Asbestos | - | Suspect ACM | | - | Intel Office | NQ | - | 3 | - | - | - | - | - | - | - | 3 | A4 | WSP\|PB 2016: Locked, no key available at time of the survey. Confirm and monitor condition. | | |
| Asbestos | - | Suspect ACM | | - | DRG Room | NQ | - | 3 | - | - | - | - | - | - | - | 3 | A4 | WSP\|PB 2016: Locked, no key available at time of the survey. Confirm and monitor condition. | | |
| Asbestos | - | Suspect ACM | | - | PABX | NQ | - | 3 | - | - | - | - | - | - | - | 3 | A4 | WSP\|PB 2016: Locked, no key available at time of the survey. Confirm and monitor condition. | | |
| **Non Asbestos Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Asbestos | PB234782 | NAD | | Bituminous Material | External, expansion joints | NQ | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | PB234783 | NAD | | Vinyl | Prosecutors block, filing room, flooring | 25m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | MAN-TAR-PS-0 | NAD | | Compressed fibre cement sheeting | Cell Block; Interior, cleaners storeroom, ceiling | 4m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | Refer to MAN-TAR-PS-0 | NAD | | Compressed fibre cement sheeting | Cell block; Interior, van dock and prisoner box, walls | 30m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | MAN-TAR-PS-2 | NAD | | Fibre cement sheeting wall panels | Female toilet and shower - walls | 2m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | Refer to MAN-TAR-PS-2 | NAD | | Fibre cement sheeting ceiling lining | Female Toilet; Interior, throughout | 50m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | Refer to AG674 | NAD | | Fibre cement sheeting wall lining | Internal Police Station; Muster Room, corridor wall – toilet to muster room | 6m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | MAN-TAR-PS-5 | NAD | | Fibre cement panel | Internal; Front entry, WC, walls | 6m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | MAN-TAR-PS-6 | NAD | | Fibre cement lining | Roof space; Ceiling lining above main office (access from hatch on roof) | 60m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | MAN-TAR-PS-7 | NAD | | Fibre cement packing | External; Packing to piers of muster room (attached demountable) | <1m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| **Lead Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Lead | XRF-74001213-10 | Present (Buried) | 4 | Paint | Internal; Crime management Unit ALCO, Walls, light blue | 80m² | NA | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: No XRF data for this location. Item in good condition, leave and monitor condition. | | |
| **Non Lead Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Lead | AG676<br>XRF827 | 0.083% | | Blue paint to concrete walls | Internal Police Station; walls throughout | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-17<br>XRF822 | 0.02% | | Paint | External; East face, front wall of station | 60m² | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-01<br>XRF840 | Not Present | | Paint | Cell block; Walls | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-15<br>XRF836 | 0.22% | | Paint | Prosecutors Block; Interior, Timber trim and doors, light blue | 20m² | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-16<br>XRF831 | <0.001% | | Paint | External; Walls to sides and rear of station, yellow | 600m² | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-02<br>XRF832 | Not Present | | Paint | Internal; Cell block, floors | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-04<br>XRF841 | Not Present | | Paint | Internal; Charge room, timber trim | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-05<br>XRF840 | Not Present | | Paint | Internal; Charge room, walls | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-08<br>XRF829 | Not Present | | Paint | Internal; Hall adj training room, yellow | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-12 | Not Present | | Paint | Internal; Crime management Unit ALCO, doors | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-03<br>XRF825 | Not Present | | Paint | Internal; Cell block hall to charge room, walls | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-06<br>XRF843 | Not Present | | Paint | Internal; Corrective services office, walls | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-07<br>XRF845 | Not Present | | Paint | Internal; Duty officer, meal room, training room block, walls | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-09<br>XRF844 | Not Present | | Paint | Internal; Hall adj. training room, trim, maroon | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-11 | Not Present | | Paint | Internal; Crime management Unit ALCO, window frames | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-13<br>XRF846 | Not Present | | Paint | Internal; Hallway adjacent supervisors office and ERISP room, walls, light blue | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001213-14<br>XRF847 | Not Present | | Paint | External; Prosecutors block and station rear, windowsills, brown | 10m² | NA | | | - | - | - | | | | 0 | Nil | | | |
| **ODS** | | | | | | | | | | | | | | | | | | | | |
| ODS | Visual observation | HFC | 5 | Refrigerant gas within Daikin air conditioning unit | Internal Police Station; Filing Room | 1 unit | NA | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: Item in good condition, leave and monitor condition | | |
| ODS | Visual observation | HFC | 6 | Refrigerant gas within Daikin air conditioning unit | Internal Police Station; Muster Room | 1 unit | NA | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: Item in good condition, leave and monitor condition | | |
| ODS | Visual observation | Suspect HFC | 6 | Refrigerant gas within Fujitsu air conditioning unit | Internal Police Station; Office off Muster Room | 1 unit | NA | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: Item in good condition, confirm, leave and monitor condition | | |
| ODS | Visual observation | Suspect HFC | 7 | Refrigerant gas within Lemair air conditioning unit | Internal Police Station; Filing Room | 1 unit | NA | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: Item in good condition, confirm, leave and monitor condition | | |
| **PCB** | | | | | | | | | | | | | | | | | | | | |
| PCB | Visual Observation | Suspect PCB | 8 | Capacitor | External and Internal: through out all buildings | 8 units | N | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: Item in good condition, confirm, leave and monitor condition | | |
| **Highway Patrol Office** | | | | | | | | | | | | | | | | | | | | |
| **Asbestos Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Asbestos | Visual Observation | Suspect ACM | 9 | Asbestos cement lining | External; Eaves, north and south | 4m² | N | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 6 | A4 | WSP\|PB 2016: Not sampled due to height restriction, approximately 3 metres. Item in good condition, leave and monitor condition | | |
| Asbestos | Refer to MAN-HIG-PO-0 | CH | 10 | Fibre cement lining | Internal; HWP Constables Office, walls and ceiling | 30m² | N | 1 | 1 | 2 | 0 | 0 | 0 | 1 | 2 | 7 | A3 | WSP\|PB 2016: Leave and monitor condition, consider removal or encapsulation. | | |
| Asbestos | MAN-HIG-PO-0 | CH | 11 | Fibre cement lining | Internal; HWP Sergeants Office, walls and ceiling | 40m² | N | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | A4 | WSP\|PB 2016: Item in good condition, leave and monitor condition | | |
| Asbestos | MAN-HIG-PO-1 | CH | | Fibre cement lining | Internal; East wall below window | 2m² | N | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | A4 | WSP\|PB 2016: Item in good condition, leave and monitor condition | | |
| Asbestos | - | Suspect ACM | | - | Central exhibits store | NQ | - | 3 | - | - | - | - | - | - | - | 3 | A4 | WSP\|PB 2016: Locked, no key available at time of the survey. Confirm and monitor condition. | | |

Surveyor: Shevan Mahamad | Property ID: TA74001212 / TA74001213 / TA74001215 | Inspection Date: 2 November 2016

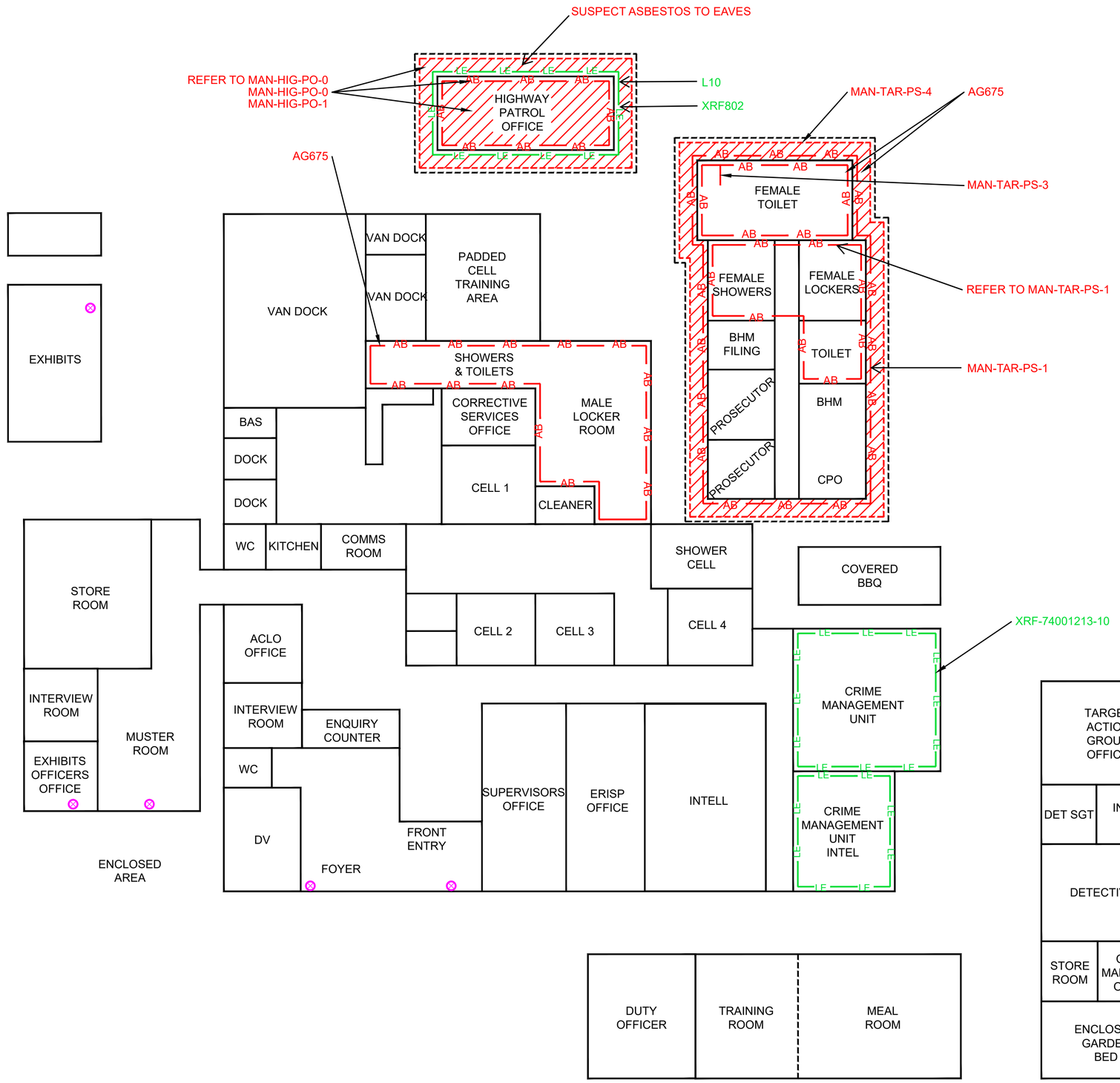
NSW Police Force Hazardous Materials Surveys - Taree Police Station and Demountables - 83 Albert Street, Taree NSW 2430

| Hazard | Sample No | Result | Photo ID | Description of Hazardous Material | Location of Hazardous Material | Quantity (m, m2, m3) | Friable | Asbestos type | Product Type | Extent of Damage | Surface Treatment | Occupant Activity | Likelihood of Disturbance | Exposure Potential | Maintenance Activity | Risk Score | WSP\|PB 2016 Reinspection Action Score | Consultant Comments | Remediation Date (where applicable) | Remediation Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Non Asbestos Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Asbestos | PB234784 | NAD | | Fibre cement lining | Internal; exhibit room, wall lining | 20m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | PB234785 | NAD | | Fibre cement lining | External; exhibit room, entry, wall lining | 10m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | PB234786 | NAD | | Fibre cement lining | External; exhibit room, eaves, throughout | 40m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | Visual Observation | NAD | | Timber | External; North, beneath eaves, infill sheeting, timber board | 2m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | MAN-TAR-PSD1-0 | NAD | | Fibre cement lining | Internal; Walls | 30m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | Refer to MAN-TAR-PSD1-0 | NAD | | Fibre cement lining | External; Eaves | 20m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| Asbestos | Refer to MAN-TAR-PSD1-0 | NAD | | Fibre cement lining | External; Entry alcove walls and ceiling | 6m² | N | 0 | - | - | - | - | - | - | - | 0 | Nil | | | |
| **Lead Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Lead | XRF-THWP-11<br>L10 | 0.22%<br>13.1% | 12 | Paint | External; eave, fascia barge boards | 5m² | NA | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: Leave, maintain and monitor condition | | |
| Lead | XRF-THWP-04<br>XRF802 | Present (Buried) | 13 | Paint | External; Window frames lower, cream | 1m² | NA | | | Av | P | L | | | | L | A3 | WSP\|PB 2016: Monitor condition, consider removal or encapsulation, reinspect periodically | | |
| **Non Lead Containing materials** | | | | | | | | | | | | | | | | | | | | |
| Lead | XRF-THWP-01<br>XRF805 | Not Present | | Paint | Exterior; East walls and door, white | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-03<br>XRF806 | Not Present | | Paint | External; Window frames, brown | 2m² | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-05<br>XRF809 | Not Present | | Paint | External; North wall; white | 10m² | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-07<br>XRF810 | Not Present | | Paint | External; Car park, covered awning, beams white | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-09<br>XRF814 | Not Present | | Paint | Internal; Timber trim, dark blue | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-02<br>XRF811 | Not Present | | Paint | External; Door trim, brown | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-06<br>XRF812 | Not Present | | Paint | External; Car park, covered awning, beams brown | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-08<br>XRF815 | Not Present | | Paint | Internal; Walls, blue | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-THWP-10<br>XRF816 | Not Present | | Paint | Internal; Ceiling, white | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001212-02<br>XRF817 | Not Present | | Paint | Internal; Trim, cream | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| Lead | XRF-74001212-01<br>XRF818 | Not Present | | Paint | Internal; Walls and door, white | NQ | NA | | | - | - | - | | | | 0 | Nil | | | |
| **Exhibits** | | | | | | | | | | | | | | | | | | | | |
| **ODS** | | | | | | | | | | | | | | | | | | | | |
| ODS | Visual observation | HFC | 14 | Refrigerant gas within Kelvinator air conditioning unit | Internal Demountable buildings | 1 unit | NA | | | G | Y | L | | | | L | A4 | WSP\|PB 2016: Item in good condition, leave and monitor condition | | |

# Appendix B

Floor Plan

Taree Police Station, 83 Albert Street - 919




LEGEND

- AB — Asbestos lining in walls
- Asbestos lining in ceiling/eaves
- LE — Lead based paint to walls
- Ozone depleting substances
- XXX — Positive asbestos sample location
- XXX — Positive lead sample location

| REV | DATE | DESCRIPTION | DRAWN | CHECK | DESIGN | VERIFY |
|---|---|---|---|---|---|---|
| B | 10/01/18 | FINAL ISSUE | KS | KS | DA | JT |
| A | 02/12/17 | ISSUE FOR REVIEW | KS | KS | DA | JT |



SCALES

N

2 m

NOT TO SCALE

A4 ORIGINAL

DO NOT SCALE THIS DRAWING - USE FIGURED DIMENSIONS ONLY
VERIFY ALL DIMENSIONS ON SITE

APPROVED FOR AND ON BEHALF OF PARSONS BRINCKERHOFF AUSTRALIA PTY LIMITED

SIGNED

DATE

WSP | PARSONS BRINCKERHOFF
Level 27, Ernst & Young Centre
680 George Street
Sydney NSW 2000
GPO BOX 5394
Sydney NSW 2001
Australia
Telephone +61 2 9272 5100
Facsimile +61 2 9272 5101
Email: sydney@pb.com.au

CLIENT

BROOKFIELD GLOBAL INTEGRATED SOLUTIONS

PROJECT

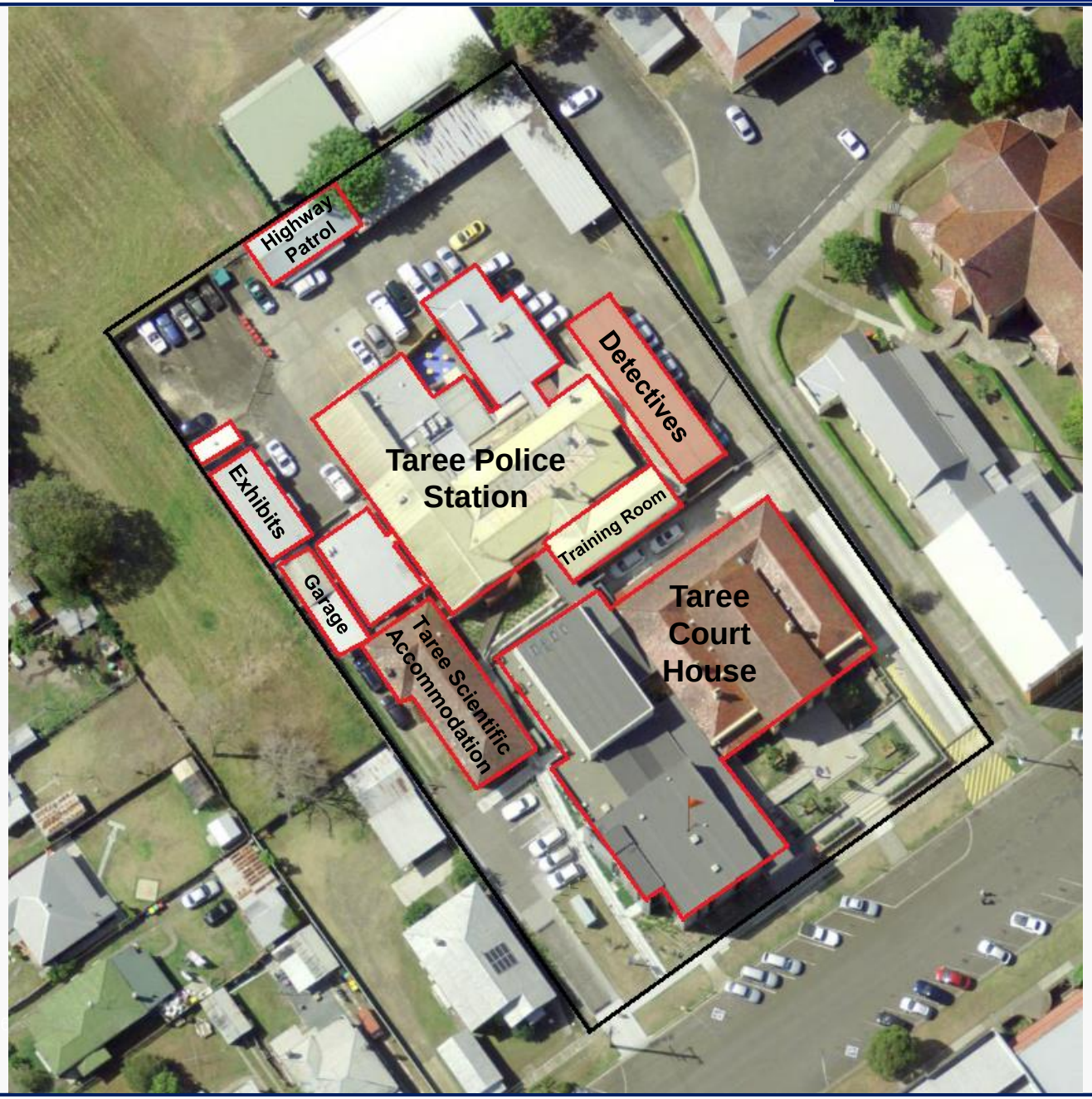
HAZARDOUS MATERIALS SURVEY

NSW POLICE FORCE
TAREE POLICE STATION
83 ALBERT STREET, TAREE

| PROJECT No. | DISCIPLINE | NUMBER | REV. |
|---|---|---|---|
| 201603987 | HAZMAT | 919 | B |

WSP | PARSONS BRINCKERHOFF

**Taree Police Station and Demountables**
Site Layout Plan

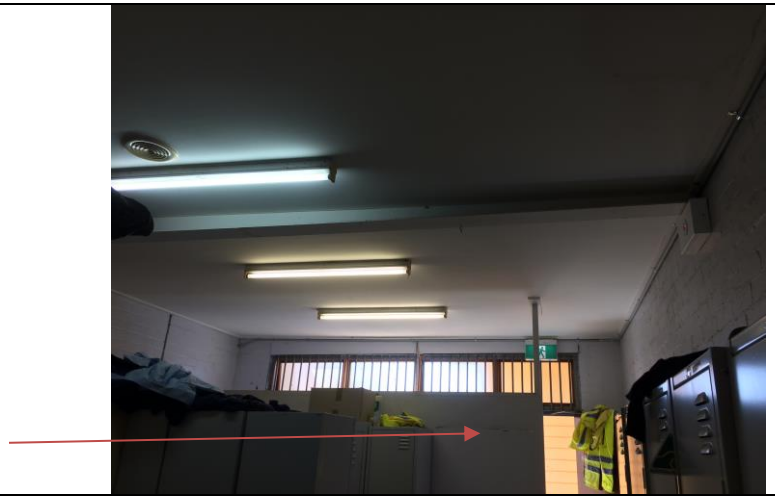



Source: Google 2011

Approximate North

# Appendix C

Photographs

| | |
|---|---|
|  |  |
| Photo 1: Prosecutors block and Female toilet block, partition wall to toilet cubicle – Compressed Asbestos fibre cement sheeting (A3) | Photo 2: Female toilet and shower block; Interior, toilet – Asbestos cement sheeting wall partition (A3) |
|  |  |
| Photo 3: Prosecutors Block; Exterior, wall panels below windows – Asbestos Fibre Cement Panels (A4) | Photo 4: Internal; Crime management Unit ALCO – Walls – Lead in light blue Paint (A4) |

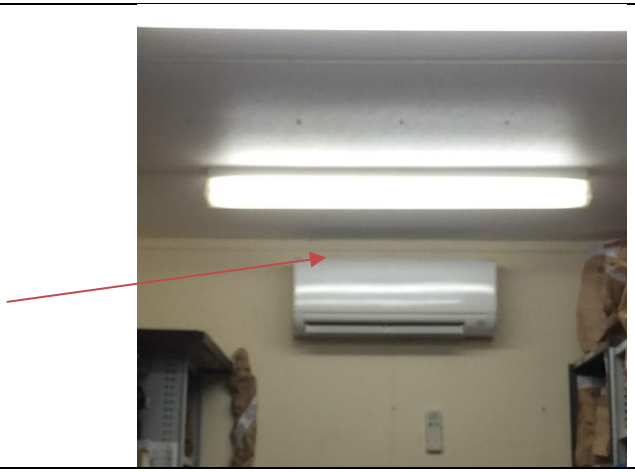


Photo 5: Internal Police Station; Filing Room – Refrigerant gas within Daikin air conditioning unit – ODS (A4)

Photo 6: Internal Police Station; Muster Room – Refrigerant gas within Daikin air conditioning unit and Refrigerant gas within Fujitsu air conditioning unit – ODS (A4)

Photo 7: Internal Police Station; Filing Room – Refrigerant gas within Lemair air conditioning unit – ODS (A4)

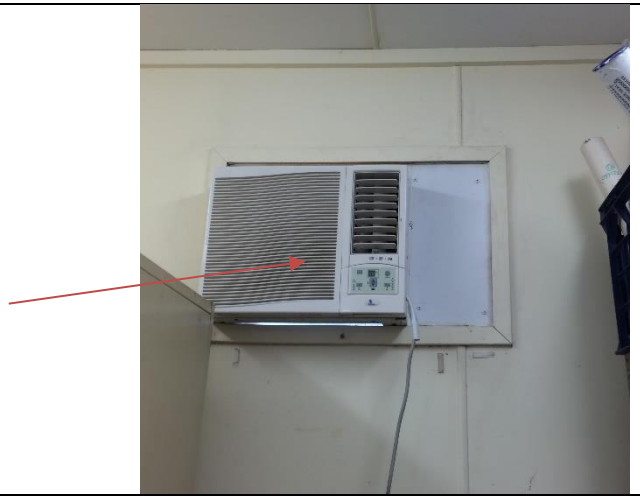
Photo 8: External and Internal: throughout all buildings – Suspect PCB Capacitors (A4)

Photo 9: Highway Patrol Office – External; Eaves, north and south – Suspect asbestos cement lining (A4)

Photo 10: Highway Patrol Office – Internal; Constables Office, walls and ceiling – Asbestos Fibre cement lining (A3)

Photo 11: Highway Patrol Office – Internal; Sergeants Office, walls and ceiling – Asbestos Fibre cement lining (A4)


Photo 12: Highway Patrol Office – External; eave, fascia barge boards – Lead Paint (A4)

| | |
|---|---|
|  |  |
| Photo 13: Highway Patrol Office – External; Window frames lower, cream – Lead Paint (A3) | Photo 4: Exhibits – Internal – Refrigerant gas within Kelvinator air conditioning unit – ODS (A4) |

# Appendix D

Certificates of Analysis

**WSP | Parsons Brinckerhoff Australia Pty Limited**

*Level 27 Ernst & Young Centre 680 George Street*
*PO Box 20967 World Square*
*Telephone +61 2 9272 1407*
*Facsimile +61 2 9272 5101*
*Email ANZLab@pbworld.com*

***ABN 80 078 004 798***

*NCSI Certified Quality System ISO 9001*

# Certificate of Analysis

| | | | |
|---|---|---|---|
| LOCATION: | Taree Police Station - 83 Albert Street, Taree | CERTIFICATE NO: | SYD-2270189A-0001-54401 |
| CLIENT: | Brookfield GIS | DATE\S SAMPLED: | 02/11/2016 |
| CLIENT ADDRESS: | Level 5, 136 Chalmers Street, Surry Hills NSW 2010 | DATE RECEIVED: | 1/12/2016 |
| TELEPHONE: | 0405 654 554 | DATE ANALYSED: | 6/12/2016 |
| EMAIL: | Gregory.Moore@apac.brookfieldgis.com | ORDER NUMBER: | N/A |
| CONTACT: | Greg Moore | SAMPLED BY: | Shevan Mahamad |

TEST METHOD: Qualitative identification of Asbestos fibre in bulk and soil samples at WSP Parsons Brinckerhoff Corporate Laboratories, by polarised light microscopy, including dispersion staining techniques using AS4964 (2004) and supplementary in house laboratory procedure (LP1 - Identification of Asbestos Fibres). This document is issued in accordance with NATA's requirements under NATA accreditation No. 17199, accredited for compliance with ISO/IEC: 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standard.

| Lab No | Sample ID | Location | Sample Description | Sample Dimensions | Identification Type |
|---|---|---|---|---|---|
| 001 | PB234782 | External ground surface - expansion joint | Bituminous Material | 7 X 7 cms | OF, NAD |
| 002 | PB234783 | Prosecutors block - filing room - vinyl flooring | Vinyl | 4 X 4 cms | NAD |
| 003 | PB234784 | Exhibit room - interior walls | Fibre Cement Sheet | 1 X 1 cms | OF, NAD |
| 004 | PB234785 | Exhibit room - entry - exterior walls | Fibre Cement Sheet | 1 X 1 cms | OF, NAD |
| 005 | PB234786 | Exhibit block - eaves | Fibre Cement Sheet | 1 X 1 cms | OF, NAD |

LEGEND:

| | | |
|---|---|---|
| NAD | - | No Asbestos Detected |
| CH | - | Chrysotile Asbestos Detected |
| A | - | Amosite Asbestos Detected |
| C | - | Crocidolite Asbestos Detected |
| UMF | - | Unknown Mineral Fibres Detected |
| SMF | - | Synthetic Mineral Fibres Detected |
| OF | - | Organic Fibres Detected |

Hand picked refers to small discrete amounts of asbestos distributed unevenly in a large body of non asbestos material.

NATA
ACCREDITED FOR
TECHNICAL
COMPETENCE

Notes:
If no asbestos is detected in vinyl tiles, mastics, sealants, epoxy resins and ore samples then confirmation by another independent analytical technique is advised due to the nature of the samples.
The results contained within this report relate only to the sample(s) submitted for testing.
PB accepts no responsibility for the initial collection, packaging or transportation of samples submitted by external persons. NATA does not accredit sampling. This document may not be reproduced except in full.

Approved Identifier

Name: Laura Wilson

Approved Signatory

Name: Catherine Bondoc

*AUTHORISATION DATE*

7/12/2016

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES1700787** | Page | : 1 of 2 |
| Client | : **PARSONS BRINCKERHOFF AUSTRALIA PTY LIMITED** | Laboratory | : Environmental Division Sydney |
| Contact | : Shevan Mahamad | Contact | : Loren Schiavon |
| Address | : ABN: 80 078 004 798 GPO BOX 5394 SYDNEY NSW, AUSTRALIA 2001 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : +61 02 92725100 | Telephone | : +61 2 8784 8503 |
| Project | : 2270189A Taree | Date Samples Received | : 13-Jan-2017 15:30 |
| Order number | : ---- | Date Analysis Commenced | : 16-Jan-2017 |
| C-O-C number | : ---- | Issue Date | : 16-Jan-2017 16:35 |
| Sampler | : Shevan Mahamad | | |
| Site | : | | |
| Quote number | : SY/628/15 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Celine Conceicao | Senior Spectroscopist | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

## Analytical Results

| Sub-Matrix: **SOIL** (Matrix: **SOIL**) | | | | Client sample ID | **L10** | **----** | **----** | **----** | **----** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 02-Nov-2016 00:00 | ---- | ---- | ---- | ---- |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **ES1700787-001** | **--------** | **--------** | **--------** | **--------** |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EG005T: Total Metals by ICP-AES** | | | | | | | | | |
| **Lead** | 7439-92-1 | 0.0005 | % | | **13.1** | **----** | **----** | **----** | **----** |

# ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

## CLIENT DETAILS

| | |
|---|---|
| Contact | Kate Liddell |
| Client | GHD Pty Ltd |
| Address | 133 Castlereagh Street<br>NSW 2000 |
| Telephone | 02 9239 7100 |
| Facsimile | 02 9239 7199 |
| Email | kate.liddell@ghd.com |
| Project | **2121371 - NSWPF - Taree Highway Patrol** |
| Order Number | (Not specified) |
| Samples | 3 |

## LABORATORY DETAILS

| | |
|---|---|
| Manager | Huong Crawford |
| Laboratory | SGS Alexandria Environmental |
| Address | Unit 16, 33 Maddox St<br>Alexandria NSW 2015 |
| Telephone | +61 2 8594 0400 |
| Facsimile | +61 2 8594 0499 |
| Email | au.environmental.sydney@sgs.com |
| SGS Reference | SE110343 R0 |
| Report Number | 0000035970 |
| Date Reported | 26/07/2012 16:23:33 |
| Date Received | 19 Jul 2012 |

## COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

2121371 - NSWPF - Taree Highway Patrol Office.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

## SIGNATORIES

Dong Liang
Inorganics Metals Team Leader

Ravee Sivasubramaniam
Hygienist

# ANALYTICAL REPORT

RESULTS

Fibre ID in bulk materials — Method AN602

| Laboratory Reference | Client Reference | Matrix | Sample Description | Date Sampled | Fibre Identification | Est.%w/w |
|---|---|---|---|---|---|---|
| SE110343.001 | MAN-HIG-PO-0 | Other | <1g Cement sheet fragments | 03 Jul 2012 | Chrysotile Asbestos Detected<br>Organic Fibres Detected | |
| SE110343.002 | MAN-HIG-PO-1 | Other | <1g Cement sheet fragments | 03 Jul 2012 | Chrysotile Asbestos Detected<br>Organic Fibres Detected | |

# METHOD SUMMARY

SE110343 R0

| METHOD | METHODOLOGY SUMMARY |
|---|---|
| AN602 | Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned. |

FOOTNOTES

| | | | | | |
|---|---|---|---|---|---|
| Amosite | - | Brown Asbestos | NA | - | Not Analysed |
| Chrysotile | - | White Asbestos | LNR | - | Listed, Not Required |
| Crocidolite | - | Blue Asbestos | * | - | Not Accredited |
| Amphiboles | - | Amosite and/or Crocidolite | | | |

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarized light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-11.pdf

# ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

## CLIENT DETAILS

| | |
|---|---|
| Contact | Kate Liddell |
| Client | GHD Pty Ltd |
| Address | 133 Castlereagh Street<br>NSW 2000 |
| Telephone | 02 9239 7100 |
| Facsimile | 02 9239 7199 |
| Email | kate.liddell@ghd.com |
| Project | **2121371 - NSWPF - Taree Highway Patrol** |
| Order Number | (Not specified) |
| Samples | 3 |

## LABORATORY DETAILS

| | |
|---|---|
| Manager | Huong Crawford |
| Laboratory | SGS Alexandria Environmental |
| Address | Unit 16, 33 Maddox St<br>Alexandria NSW 2015 |
| Telephone | +61 2 8594 0400 |
| Facsimile | +61 2 8594 0499 |
| Email | au.environmental.sydney@sgs.com |
| SGS Reference | **SE110343 R0** |
| Report Number | 0000035968 |
| Date Reported | 26 Jul 2012 |
| Date Received | 19 Jul 2012 |

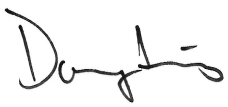
## COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

2121371 - NSWPF - Taree Highway Patrol Office.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

## SIGNATORIES



Dong Liang
Inorganics Metals Team Leader

Ravee Sivasubramaniam
Hygienist

| Parameter | Units | LOR | Sample Number<br>Sample Matrix<br>Sample Date<br>Sample Name | SE110343.001<br>Material<br>03 Jul 2012<br>MAN-HIG-PO-0 | SE110343.002<br>Material<br>03 Jul 2012<br>MAN-HIG-PO-1 | SE110343.003<br>Paint<br>03 Jul 2012<br>XRF-THWP-11 |
|---|---|---|---|---|---|---|
| **Fibre ID in bulk materials** **Method: AN602** | | | | | | |
| FibreID | | | | | | |
| Asbestos Detected | No unit | - | | Yes | Yes | - |
| **Metals in Paint by ICPOES** **Method: AN065/AN320** | | | | | | |
| Lead, Pb | %w/w | 0.001 | | - | - | **0.22** |

# QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

# METHOD SUMMARY

| METHOD | METHODOLOGY SUMMARY |
|---|---|
| AN065/AN320 | A portion of paint chips sample is digested with nitric acid to solubilise the metals into solution. Digest then analysed by ICP OES with result calculated back to the as received paint sample basis. |
| AN602 | Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned. |

FOOTNOTES

| | |
|---|---|
| IS | Insufficient sample for analysis. |
| LNR | Sample listed, but not received. |
| * | This analysis is not covered by the scope of accreditation. |
| ^ | Performed by outside laboratory. |
| LOR | Limit of Reporting |
| ↑↓ | Raised or Lowered Limit of Reporting |
| QFH | QC result is above the upper tolerance |
| QFL | QC result is below the lower tolerance |
| - | The sample was not analysed for this analyte |
| NVL | Not Validated |

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-11.pdf

# ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

## CLIENT DETAILS

| | |
|---|---|
| Contact | Kate Liddell |
| Client | GHD Pty Ltd |
| Address | 133 Castlereagh Street<br>NSW 2000 |
| Telephone | 02 9239 7100 |
| Facsimile | 02 9239 7199 |
| Email | kate.liddell@ghd.com |
| Project | **2121371 - NSWPF - Taree Demountable #2** |
| Order Number | (Not specified) |
| Samples | 1 |

## LABORATORY DETAILS

| | |
|---|---|
| Manager | Huong Crawford |
| Laboratory | SGS Alexandria Environmental |
| Address | Unit 16, 33 Maddox St<br>Alexandria NSW 2015 |
| Telephone | +61 2 8594 0400 |
| Facsimile | +61 2 8594 0499 |
| Email | au.environmental.sydney@sgs.com |
| SGS Reference | SE110340 R0 |
| Report Number | 0000035915 |
| Date Reported | 26/07/2012 14:47:42 |
| Date Received | 19 Jul 2012 |

## COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

2121371 - NSWPF - Taree Demountable #2 - #74001212.

Sample # 1: ashed after initial stereo microscope examination, re-examined and trace analysis performed on all samples.
No trace asbestos fibres detected using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

## SIGNATORIES

Huong Crawford
Laboratory Manager

Ravee Sivasubramaniam
Hygienist

# ANALYTICAL REPORT

SE110340 R0

RESULTS

Fibre ID in bulk materials — Method AN602

| Laboratory Reference | Client Reference | Matrix | Sample Description | Date Sampled | Fibre Identification | Est.%w/w |
|---|---|---|---|---|---|---|
| SE110340.001 | MAN-FOR-PSD1-0 | Other | <1g Cement sheet fragments | 03 Jul 2012 | No Asbestos Detected<br>Organic Fibres Detected | |

# METHOD SUMMARY

SE110340 R0

| METHOD | METHODOLOGY SUMMARY |
|---|---|
| AN602 | Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned. |

FOOTNOTES

| | | | | | |
|---|---|---|---|---|---|
| Amosite | - | Brown Asbestos | NA | - | Not Analysed |
| Chrysotile | - | White Asbestos | LNR | - | Listed, Not Required |
| Crocidolite | - | Blue Asbestos | * | - | Not Accredited |
| Amphiboles | - | Amosite and/or Crocidolite | | | |

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarized light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-11.pdf

# ANALYTICAL REPORT

14 May 2009

**Coffey Environments Pty Ltd**
Level 1, 3 Rider Boulevard
RHODES
NSW 2138

**Attention:** **Beki Lee**

Your Reference: ENVIRHOD00290AA - Taree Police Station

Our Reference: SE69138 Samples: 2 Materials, 1 Paint
Received: 11/5/09

Preliminary Report Sent: Not Issued

These samples were analysed in accordance with your written instructions.

For and on Behalf of:
SGS ENVIRONMENTAL SERVICES

| | | |
|---|---|---|
| Client Services: | Simon Matthews | Simon.Matthews@sgs.com |
| Sample Receipt: | Angela Mamalicos | AU.SampleReceipt.Sydney@sgs.com |
| Laboratory Manager: | Edward Ibrahim | Edward.Ibrahim@sgs.com |

*Results Approved and/or Authorised by:*

**Ravee Sivasubramaniam**
Asbestos Signatory

**Huong Crawford**
Metals Signatory





SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Unit 16/33 Maddox Street Alexandria NSW 2015 Australia
t +61 (0)2 8594 0400 f + 61 (0)2 8594 0499 www.au.sgs.com

| Lead in Paint<br>Our Reference:<br>Your Reference<br>Sample Matrix | UNITS<br>----------<br>---------- | SE69138-3<br>AG 676<br>Paint |
|---|---|---|
| Date Extracted (Metals) | | 12/05/2009 |
| Date Analysed (Metals) | | 12/05/2009 |
| Lead in paint | % | 0.083 |





SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Unit 16/33 Maddox Street Alexandria NSW 2015 Australia
t +61 (0)2 8594 0400 f + 61 (0)2 8594 0499 www.au.sgs.com

| Asbestos ID in materials<br>Our Reference:<br>Your Reference<br>Sample Matrix | UNITS<br>----------<br>---------- | SE69138-1<br>AG 674<br>Material | SE69138-2<br>AG 675<br>Material |
|---|---|---|---|
| Date Analysed | | 14/05/2009 | 14/05/2009 |
| Sample Description | | <1g fibreboard fragments | <1g cement sheet fragments |
| Asbestos ID in materials | - | No asbestos detected Organic fibres detected* | Chrysotile asbestos detected |





SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Unit 16/33 Maddox Street Alexandria NSW 2015 Australia
t +61 (0)2 8594 0400 f + 61 (0)2 8594 0499 www.au.sgs.com

| Method ID | Methodology Summary |
|---|---|
| **SEP-033** | Digestion of Paint Chips - Samples are digested by heating with nitric acid for the analysis of lead by ICPOES. |
| **AN602** | Analysed using in house method AN602 - Qualitative identification of Asbestos Fibres, Synthetic Mineral Fibres and Organic Fibres in bulk samples (including building materials and soils) using Polarised Light Microscopy and Dispersion Staining Techniques. Our NATA Accreditation does not currently cover the identification of Synthetic Mineral Fibres and Organic Fibres, however, according to new NATA requirements, the reporting of these fibres is compulsory if detected. |





SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Unit 16/33 Maddox Street Alexandria NSW 2015 Australia
t +61 (0)2 8594 0400 f + 61 (0)2 8594 0499 www.au.sgs.com

| QUALITY CONTROL<br><br>Lead in Paint | UNITS | LOR | METHOD | Blank | Duplicate Sm# | Duplicate<br><br>Base + Duplicate + %RPD | Spike Sm# | Matrix Spike % Recovery<br>Duplicate + %RPD |
|---|---|---|---|---|---|---|---|---|
| Date Extracted (Metals) | | | | 12/05/2009 | [NT] | [NT] | SE69138-1 | 12/05/2009 |
| Date Analysed (Metals) | | | | 12/05/2009 | [NT] | [NT] | SE69138-1 | 12/05/2009 |
| Lead in paint | % | 0.001 | SEP-033 | <0.0010 | [NT] | [NT] | SE69138-1 | 101% |

| QUALITY CONTROL<br>Asbestos ID in materials | UNITS | LOR | METHOD | Blank |
|---|---|---|---|---|
| Date Analysed | | | | [NT] |





SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Unit 16/33 Maddox Street Alexandria NSW 2015 Australia
t +61 (0)2 8594 0400 f + 61 (0)2 8594 0499 www.au.sgs.com

**Result Codes**

| | | | | | |
|---|---|---|---|---|---|
| [INS] | : | Insufficient Sample for this test | [RPD] | : | Relative Percentage Difference |
| [NR] | : | Not Requested | * | : | Not part of NATA Accreditation |
| [NT] | : | Not tested | [N/A] | : | Not Applicable |

**Report Comments**

Sampled by the client

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy.
This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

Sample # 1: was ashed after initial stereo microscope examination, re-examined and trace analysis performed on all samples.
No respirable fibres detected using trace analysis technique.
Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.
Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced:
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)


**Quality Control Protocol**

**Method Blank**: An analyte free matrix to which all reagents are added in the same volume or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. A method blank is prepared every 20 samples.
**Duplicate**: A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.
**Surrogate Spike**: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are added to samples before extraction to monitor extraction efficiency and percent recovery in each sample.
**Internal Standard**: Added to all samples requiring analysis for organics (where relevant) or metals by ICP after the extraction/digestion process; the compounds/elements serve to give a standard of retention time and/or response, which is invariant from run-to-run with the instruments.
**Laboratory Control Sample**: A known matrix spiked with compound(s) representative of the target analytes. It is used to document laboratory performance. When the results of the matrix spike analysis indicates a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.
**Matrix Spike**: An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

**Quality Acceptance Criteria**

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf





SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Unit 16/33 Maddox Street Alexandria NSW 2015 Australia
t +61 (0)2 8594 0400 f + 61 (0)2 8594 0499 www.au.sgs.com

# Appendix E

Remedial Certification