Government of **Western Australia**
Department of **Commerce**

Building Commission

INTERIM REPORT

Perth Children's Hospital asbestos

September 2016

BUILDING COMMISSION
INTERIM REPORT

PERTH CHILDREN'S HOSPITAL
ASBESTOS

An interim report on the discovery of asbestos within imported atrium roof panel products used in the construction of the new Perth Children's Hospital

13 September 2016

Government of **Western Australia**
Department of **Commerce**

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Glossary of terms, acronyms and abbreviations

Acronym	Full title
ABF	Australian Border Force An agency of the Commonwealth Government Department of Immigration and Border Protection
ACM	Asbestos containing materials
ARL	Analytical Reference Laboratory
Arup	Arup Pty Ltd
ASEA	Asbestos Safety and Eradication Agency
Aurecon	Aurecon Australia Pty Ltd
CFMEU	Construction, Forestry, Mining and Energy Union
Comcare	Comcare Commonwealth Government agency established under the *Safety Rehabilitation and Compensation Act 1988*
CRA	*Building Services (Complaint Resolution and Administration) Act 2011*
Cth	Commonwealth
FDAR	Focus Demolition and Asbestos Removalists (unrestricted licensed asbestos removalist)
fibres/mL	Fibres per millilitre of air
GCS	Global Construction Services Limited
Headerboard	Zhejiang Headerboard Building Materials Co., Ltd.
IAQS	Indoor Air Quality Solutions
John Holland	John Holland Pty Ltd Main building contractor for the Perth Children's Hospital
Lancall	Lancall Nominees Pty Ltd (Occupational Hygiene Consultants)
L&M Painting	L & M Painting Service (restricted licensed asbestos removalist)
NATA	National Association of Testing Authorities
NCC	National Construction Code, containing the Building Code of Australia as Volumes 1 and 2

PCBU	Persons Conducting a Business or Undertaking A term under the *Work Health and Safety Act 2011 (Cth)*
PCH	Perth Children's Hospital
OSH Act	*Occupational Safety and Health Act 1984*
OSH regulations	Occupational Safety and Health Regulations 1996
SDBT	Shenyang Dingyisheng Business Trading Co., Ltd.
SMF	Synthetic mineral fibre
SP&AS	Strategic Projects & Asset Sales division of the Western Australian Department of Treasury
TRA	Task risk assessment
URP	Unitised roof panel The building component that included the asbestos containing fibre cement sheeting
WA	Western Australia
WHS	*Work Health and Safety Act 2011 (Cth)*
WorkSafe	WorkSafe (WA)
Yuanda (Aus)	Yuanda Australia Pty Ltd
Yuanda China	Shenyang Yuanda Aluminium Industry Engineering Co., Ltd.
Yuanda	Yuanda (Aus) and Yuanda China as a commercial group

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Executive summary

This is an interim report on the Building Commission audit of the Perth Children's Hospital (PCH). The audit examines the finding of asbestos at the hospital as well as other known areas of concern that have been publicised, such as plumbing issues (including the recent finding of lead in the water), fire doors, and damaged facade panels.

This interim report only focuses on the finding of asbestos in terms of how the asbestos incident was managed, where the asbestos entered the supply chain and how it will be remediated.

The Building Commission audit examined the procurement process for the unitised roof panels (URPs) at the PCH and the proposed remediation plan to remove the asbestos-containing material (ACM).

Additionally, a separate audit is assessing all Yuanda Australia Pty Ltd (Yuanda (Aus)) products and materials in other buildings in Western Australia (WA) where they have been installed.

These assessments and inquiries provide a fair assessment of the building work and the builder's management of the works.

In July 2016, work was undertaken at the PCH to fit an additional mechanical smoke exhaust system into the north atrium roof made from URP. The roof panels were supplied by subcontractor Yuanda (Aus). After creating an opening, workers raised concerns about the fibre cement sheets within the roof panels. The building contractor, John Holland Pty Ltd (John Holland), arranged for a fragment to be tested by a National Association of Testing Authorities (NATA) accredited testing facility which confirmed the presence of asbestos in the fragment.

Findings of this interim report include:

- John Holland appropriately managed the response after asbestos was confirmed; but the task risk assessment and work to create the openings should have more clearly and effectively addressed the dust hazard.
- The procurement processes used by John Holland were comprehensive and consistent with industry practice.
- The manufacturing process used by Yuanda allowed non-specified and non-conforming products to enter the supply chain.
- The remediation plan proposed by John Holland includes safe and suitable processes to replace affected components within the URPs and verification that they will be fit-for-purpose.

The interim report concludes that:

John Holland employed a comprehensive procurement process, both in relation to the URPs and more generally. However, this process could be improved.

Shenyang Yuanda Aluminium Industry Engineering Co., Ltd, (Yuanda China) specified that its agent must purchase and supply fibre cement sheet from Zhejiang Headerboard Building Materials Co., Ltd. (Headerboard). The agent may have sourced the asbestos containing cement sheet from either:

- Headerboard, and been supplied ACM despite Headerboard's advertising as an asbestos-free manufacturer; or
- an alternative supplier, contrary to its contract with Yuanda China.

In addition, Yuanda (Aus) advised that Yuanda China had conducted an investigation in relation to the non-compliant components of the URPs. During this investigation Yuanda China provided information to Yuanda (Aus) indicating that URPs were manufactured with

either a fibre cement sheet or, contrary to the specification, a plasterboard sheet component, and that URPs of both types were installed at the PCH.

The substitution of asbestos-containing fibre cement sheets and plasterboard in URPs for the specified non-asbestos fibre cement sheet is a failure in the procurement and contract management process.

The presence of ACM was a result of factors, including:

- the URPs were a non-standard product for the subcontractor Yuanda (Aus);
- the product was sourced through a complex supply chain, in an international market, with differing legislative requirements in relation to asbestos;
- awareness of the risk of inadvertent procurement of asbestos containing building materials within this supply chain appears to be low;
- all stakeholders relied on country-of-origin documentation without further testing in Australia;
- none of the organisations in the supply chain for the URPs had a system to require asbestos testing for components and materials that do or may contain fibrous materials; and
- the Department of Immigration and Border Protection (DIBP) does not test every batch of imported building material for the presence of asbestos.

The response after asbestos was confirmed was managed appropriately. Contamination was confined to a specific area and fully decontaminated, as evidenced by extensive testing including 280 bulk, surface and air samples.

An appropriate remediation plan for removal of the remaining asbestos containing components from the URPs is in place. Completion of the work in accordance with this plan is expected to prevent exposure to asbestos and to leave the URPs free of asbestos.

Cutting the openings in the URPs caused a dust hazard that the subsequent discovery of asbestos makes more severe. The task risk assessment and work to create the openings should have more clearly and effectively addressed the dust hazard, even though asbestos was not expected.

Scope

The purpose of the Building Commissioner's independent audit is to assess whether the new PCH has been completed in accordance with the plans and specifications; whether the building laws have been complied with; and how the building standards have been applied, with a focus on building materials where concerns have been raised.

The scope of this interim report is to provide the Building Commission's findings on the management of the ACM found at the PCH; and in particular:

1. the management of the asbestos event;
2. John Holland procurement procedures; and
3. the remediation plan.

A separate report or reports will cover the other aspects of the audit. This will allow the Building Commissioner to determine if he is satisfied that the hospital is safe to occupy and that any risks to public safety have been managed.

Background

The PCH is a significant new addition to WA infrastructure and will be the sole dedicated children's hospital for the State. With a budget of $1.2 billion, it covers 125,000m^2 across six treatment floors, two research storeys and two basement levels. Level eight consists of services and plant equipment with a new helipad located above to service the QEII campus.

The PCH is one of the largest and most complex construction projects of its type in WA. The facility will have 298 beds and is designed to allow for future expansion.

As is common with modern building projects, many of the components and systems were sourced internationally, for reasons including cost, time constraints and international specialist expertise.

The project owner is the Strategic Projects and Asset Sales division of the Department of Treasury (SP&AS), and upon completion the hospital will be handed over to the Department of Health. SP&AS engaged John Holland as the design-and-construct contractor and construction started in 2011.

After a complex construction period, the PCH is almost at practical completion and scheduled to be delivered to the Department of Health.

On Monday 11 July 2016, work was undertaken at the PCH to fit an additional mechanical smoke exhaust fan system into and through the atrium roof section which is constructed with URPs. The URPs were designed as a type of sandwich panel, consisting of a core of SMF insulating batts with two layers of fibre cement sheeting located underneath the batts (see Figure 1). This sheeting was the element that was found to be an ACM. The atrium roof is made up of 174 URPs, restricted to a single area of the hospital roof, located outside of the level seven and level eight link bridges on the north balcony (see Photograph 1).

The URPs were installed in mid-2014. They were custom designed to be installed as a proprietary building element, and were made-to-measure to provide an efficient and cost-effective installation solution.

Photograph 1
Unitised roof panels installed at Perth Children's Hospital

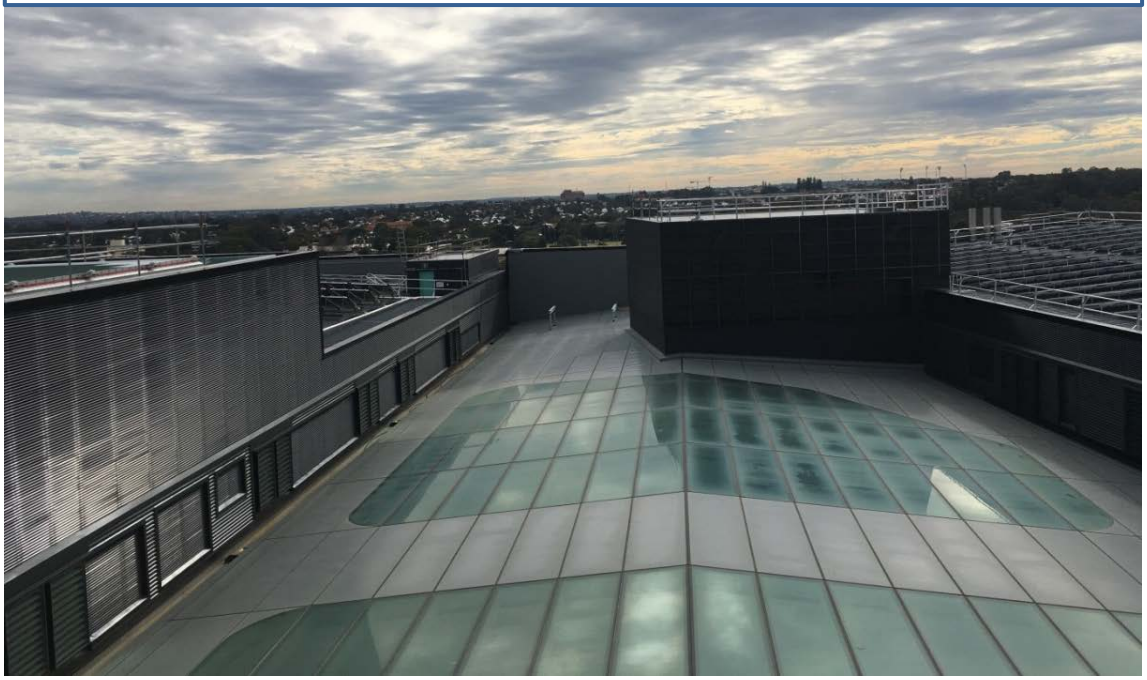
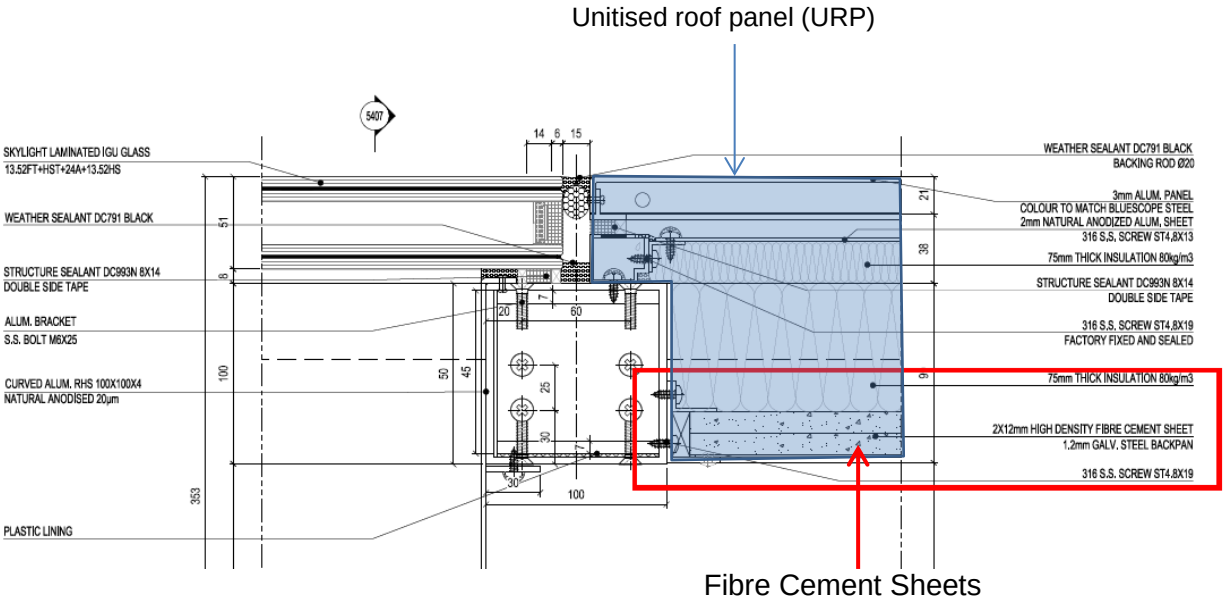
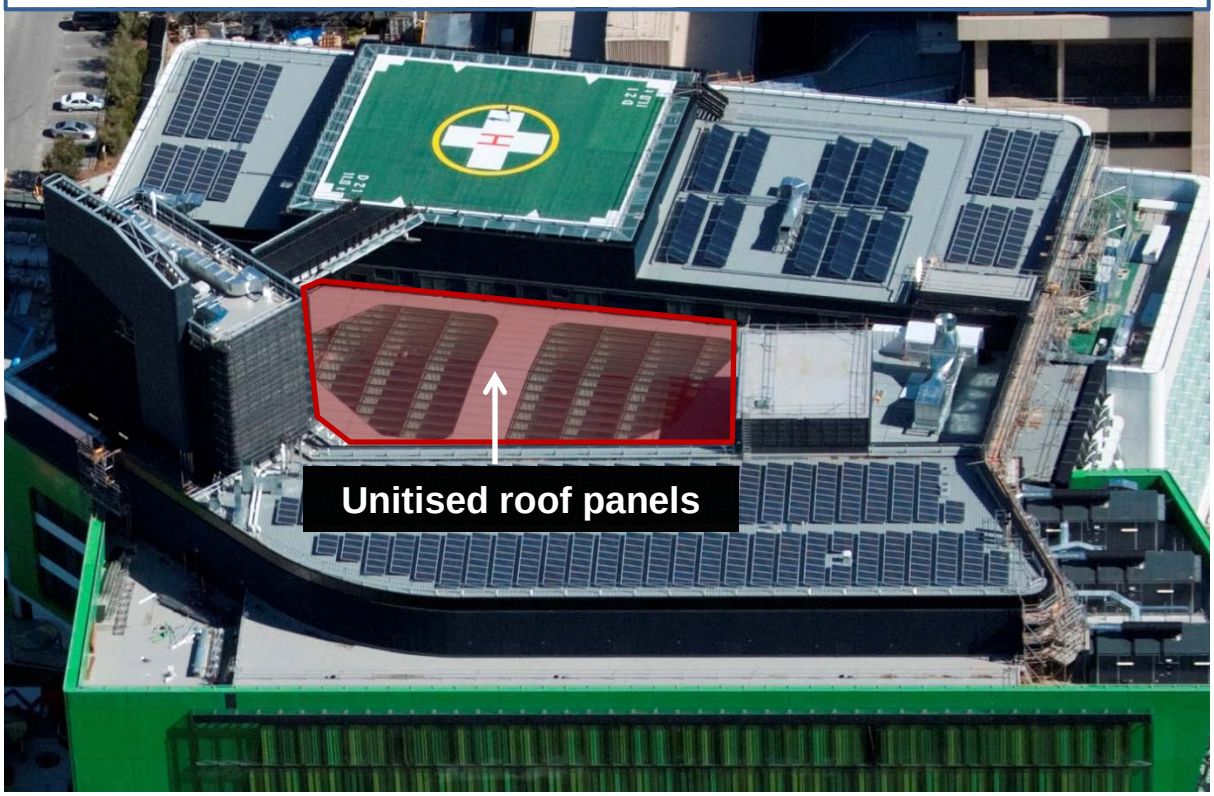


Figure 1: Cross-section diagram of unitised roof panel (URP)



The URPs are a bespoke design situated immediately adjacent to the roof-top helicopter landing pad, and over the atrium section, and as such, were required to meet a stringent acoustic performance requirement (see Photograph 2).

Photograph 2
Helipad at Perth Children's Hospital



John Holland sub-contracted Yuanda (Aus) to supply the façade, including the URPs. The URPs were then imported and supplied by Yuanda (Aus), and installed by Global Construction Services Limited (GCS) under contract to Yuanda (Aus) (see Figure 2).

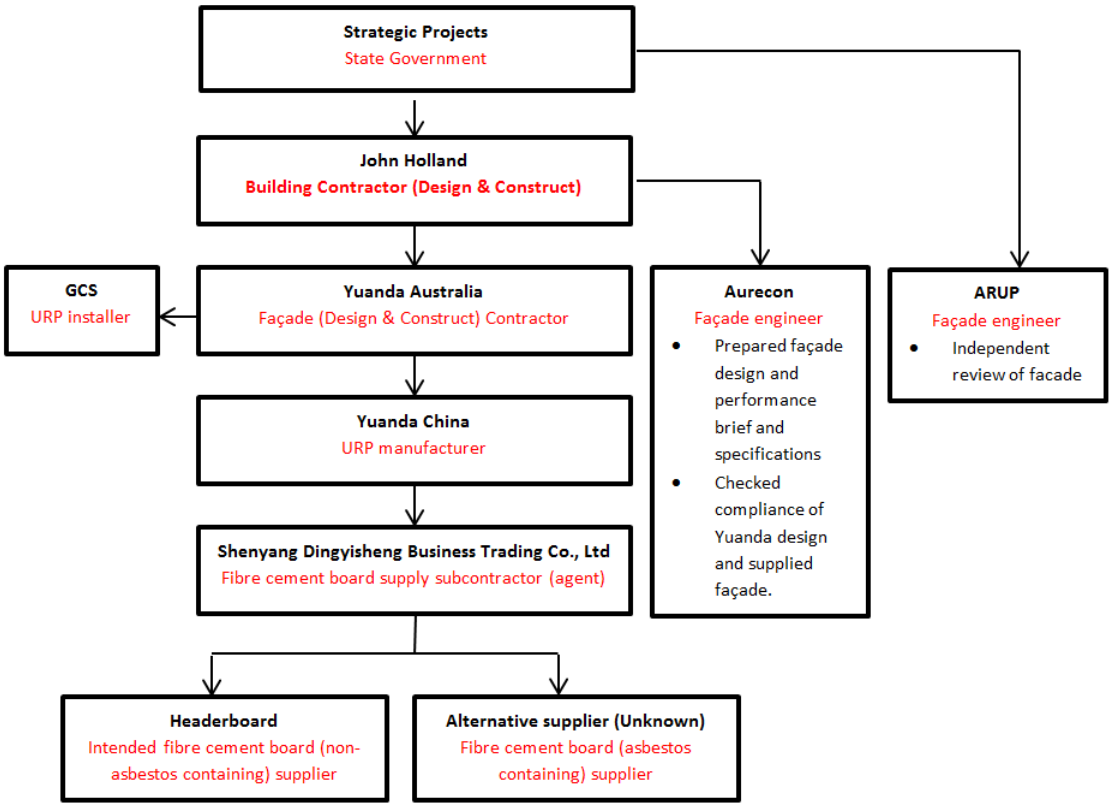
During the fitting of the additional mechanical smoke exhaust system to the atrium, workers from GCS made a total of six openings in the URPs. This work generated a considerable amount of dust. The workers examined a piece of the fibre cement sheeting component of the URPs. On visual inspection, workers were suspicious of the components, believing that they and the dust generated by the cutting may have contained asbestos.

On Tuesday 12 July 2016, as part of the John Holland Asbestos Management Plan in place for the site, John Holland sent the piece of fibre cement sheeting to Analytical Reference Laboratory (ARL), a NATA-accredited testing laboratory which found that the sample contained chrysotile (white) asbestos. The decision to undertake testing was partly informed by a media report that Yuanda (Aus)-supplied packer/isolator material (known as Klingerit 200) that also contained asbestos had been discovered at a construction site at 1 William Street in Brisbane, Queensland on Monday 11 July 2016.

On Friday 15 July 2016, WA Building Commissioner Peter Gow announced that the Building Commission would audit the PCH using powers under the *Building Services (Complaint Resolution and Administration) Act 2011* (CRA).

Stakeholder relationships

Figure 2: Stakeholder relationships



The national context

The issue of non-conforming building products (NCBPs), whether domestically manufactured or imported, is an important and complex challenge of national significance, impacting on the construction, manufacturing, trade (imports) and retail sectors. NCPBs are those that claim to be something they are not; do not meet required standards for their intended use; or are marketed or supplied with the intent to deceive those who use them.

Recognising concerns about health and safety risks posed by NCBPs, the Building Ministers' Forum (BMF) meeting of 31 July 2015 agreed to establish a the Senior Officers' Group (SOG) to investigate strategies to minimise the risks to consumers, businesses and the community associated with the failure of building products to conform to relevant laws and regulations, including at the point of import.

The SOG is comprised of senior officers from the Commonwealth, states and territories. Its investigations highlighted that the extent of non-conforming building products in Australia is largely unknown. There are also limited powers within the current building regulatory system, which focuses heavily on the end of the supply chain. The SOG identified a range of strategies to address these issues, and following wide consultation on the 19 February 2016 the BMF endorsed the SOG "*Strategies to Address Risks Related to Non-Conforming Building Products*" (SOG Roadmap). The full report can be found at:

http://www.hpw.qld.gov.au/SiteCollectionDocuments/NonConformingBuildingProductsReport.pdf.

The SOG Roadmap provides a framework for implementing these strategies by guiding the direction of progress required to deliver the strategies, providing the jurisdiction to be responsible for each strategy and describing key indicators of success.

The recommended strategies include:

- Improving state and territory regulatory frameworks to enhance building regulator powers in responding to non-conforming building products;
- National forum of building regulators;
- Improving collaboration between consumer law and building regulators;
- Education strategies;
- Consider establishment of a one-stop-shop national website;
- Evidence provision to the Commonwealth when states and territories prohibit a non-conforming building product;
- Importation information sharing arrangement between the Commonwealth and state and territory regulators in relation to non-conforming building products;
- Review of Australian Standards related to high risk building products that are referenced in the NCC, with a view to assessing costs and benefits of mandating third party certification and a national register for these products; and
- Independent research, including manufacturer and random off-the-shelf product testing.

All jurisdictions will continue to work together to deliver the strategies outlined in this Roadmap, including across the regulatory areas of building, consumer law and border protection (importation). Following the discovery of asbestos products at the PCH and a similar insistence in Brisbane the SOG group shared information and strategies that contributed to a rapid response to this matter nationally.

The actions in SOG Roadmap are aimed at improving government responses to instances of non-conforming building products, enhancing industry and consumer awareness, and encouraging greater responsibility in the safe use of building products. Industry, consumers and homeowners can be assured that issues around NCBPs are being taken seriously with actions underway to address them.

Relevant laws

The Building Act 2011 (WA)

The *Building Act 2011* (Building Act) prescribes standards for the construction and demolition of buildings and approval processes for construction, demolition and occupancy. The Building Act came into effect on 2 April 2012.

Under the Building Act, an owner or occupier of a completed class 2-9 building must not occupy or use, or permit the occupation or use of, the building unless:

1. an occupancy permit is in effect for the building;
2. a temporary permit (or occupancy permit for an incomplete building) is in effect for the building for the period of occupation or use after the completion of the building; or
3. an exemption applies under the Building Act, Building Regulations or a Ministerial order.

Subregulation 43(f) of the Building Regulations 2012 exempts the PCH from the occupancy permit requirements because it is a building for which a building licence was not required under the former provisions as it commenced prior to 2 April 2012. This has been the case for many decades, however State buildings are now covered as a result of the new Building Act provisions.

A building licence under the former provisions (*Local Government Miscellaneous Provisions Act 1960*) was not required for the PCH because section 373(3) of that Act exempted "*a building owned, or occupied by, or under the control or management of, the Crown in right of the State or a department, agency or instrumentality of the Crown in right of the State*".

Therefore, a building licence was not required for the PCH under the former provisions and so an occupancy permit is not required under the Building Act.

Notwithstanding the fact that the PCH does not require an occupancy permit under the Building Act, the Building Commissioner is able to provide advice to the Minister, under section 86 of the CRA, in relation to whether the PCH in its current state is considered safe to occupy.

Further discussion on building control in WA is at Appendix 1.

Asbestos regulations in Australia

Asbestos is a term used to describe a specific group of fibrous minerals, with the more common types of asbestos being chrysotile (white asbestos), amosite (brown asbestos), and crocidolite (blue asbestos). Of the asbestos types, blue asbestos is considered most hazardous, due to the size, shape and biopersistence (long-term retention in the body) of the fibres.

Since 31 December 2003, it has been illegal to import, store, supply, sell, install, use or re-use ACM. There is an unknown but considerable amount of asbestos in products and materials manufactured and installed prior to 2004. Most of this is in a stable form and is not considered to be a hazard while it remains undisturbed.

Everyone is exposed to extremely low levels of asbestos present in the air we breathe from natural and manufactured sources and this background exposure presents a very low health risk. ACM become dangerous when disturbed as the dust, containing tiny fibres, can be breathed in. Some asbestos fibres that have lodged deep within the lungs may remain there for the rest of the person's life.

Known asbestos related diseases include pleural plaques, asbestosis, mesothelioma, and lung cancer.

Asbestos related disease risks increase with the dose inhaled, which depends on the amount of fibres in the air and the frequency of the exposure. However, it is always important to keep exposure to asbestos fibres as low as possible.

Further information on asbestos health risks is available from *Asbestos: A Guide for Householders and the General Public* published by Enhealth.

Work Health and Safety Act 2011 (Cth)

This Act puts obligations on Commonwealth agencies and national employers who are licensed to be self-insured for workers' compensation with respect to the safety of their workplaces, systems of work and their workers.

As John Holland Group Pty Ltd and John Holland Pty Ltd are both self-insured licensees, their workplace health and safety requirements are under Commonwealth jurisdiction. This means that they must comply with the *Work Health and Safety Act 2011* (Cth) (WHS Act). The agency responsible for administering the WHS Act is Comcare, the relevant work health and safety regulator.

Under section 19 of the WHS Act, the primary duty of care requires all 'persons conducting a business or undertaking' (PCBU) to ensure, as far as is reasonably practicable, the health and safety of:

1. workers engaged, or caused to be engaged by the PCBU; and
2. workers whose activities in carrying out the work are influenced or directed by the person, while workers are at work in the business or undertaking.

In this case, John Holland would be considered the PCBU and the PCH would be considered the undertaking.

Section 20 of the WHS Act requires that PCBUs with management or control of a workplace ensure, so far as is reasonably practicable, the workplace and anything arising from the workplace are without risks to the health and safety of any person.

Occupational Safety and Health Act 1984 (WA) and Occupational Safety and Health Regulations 1996

This Act puts a number of general requirements on different duty holders with respect to the safety of their workplaces, systems of work and their workers. On the PCH, both State employees and subcontractors who are not self-insured under the WHS Act are covered by the *Occupational Safety and Health Act 1984* (WA) (OSH Act).

Employers are required to:

- provide and maintain a safe working environment for their employees, as far as practicable (Section 19);
- as far as practicable, provide and maintain a safe working environment for their contractors, and any person employed or engaged by the contractor to assist in carrying out the work concerned, in relation to matters over which the employer has capacity to exercise control (Sections 19 and 23D);
- ensure the safety and health of members of the public, in relation to work carried out by or for the employer, as far as practicable (Section 21).

Section 22 requires persons who have control of workplaces to any extent to ensure, as far as practicable, that people at those workplaces are not exposed to hazards.

Section 55 provides that individual officers (including directors and managers) can be held liable if a body corporate (their company) is guilty of an offence under the OSH Act and it is proved that the offence occurred with the consent or connivance of, or was attributable to, any neglect on the part of the officer.

The Occupational Safety and Health Regulations 1996 (OSH regulations) address requirements in relation to asbestos.

Regulation 5.32A provides that articles containing asbestos are not to be used at workplaces unless they were installed prior to the relevant transition date (generally 1 January 2004).

Regulation 5.40 provides that if —

(a) a person is exposed at a workplace to a carcinogenic substance as a result of a spill or other incident; or

(b) monitoring or health surveillance results indicate that a person may have had excessive exposure at a workplace to a carcinogenic substance,

then a person who, at the workplace, is an employer, the main contractor or a self-employed person must, as soon as practicable, report the matter to the WorkSafe Commissioner.

Regulation 5.43 provides that an employer, the main contractor, a self-employed person or the person having control of the workplace must ensure that —

(a) the presence and location of asbestos at the workplace is identified; and

(b) the process of identification referred to in paragraph (a) and the assessment of risks arising from hazards in relation to asbestos at the workplace are conducted in accordance with the Code of Practice for the Management and Control of Asbestos in Workplaces (2005).

then a person who, at the workplace, is an employer, the main contractor or a self-employed person must, as soon as practicable, report the matter to the WorkSafe Commissioner.

Regulation 5.49 provides that a person who is an employer, the main contractor, a self-employed person or the person having control of the workplace must ensure that, as far as is practicable, no person in the asbestos work area is exposed to asbestos dust and that, where such dust may be present, people are provided with appropriate personal protective clothing or equipment.

Health Act 1911 (WA)

Regulation 4 of the Health (Asbestos) Regulations 1992, made under the *Health Act 1911*, declares asbestos to be a hazardous substance.

Regulation 7(3) states that a person who stores, breaks, damages, cuts, maintains, repairs, removes, moves, or disposes of, or uses any material containing asbestos without taking reasonable measures to prevent asbestos fibres entering the atmosphere commits an offence. Taking ‘reasonable measures’ includes:

(a) using water or other practical measures to keep airborne material containing asbestos to a minimum;

(b) not using any tools other than non-powered hand tools or portable power tools that incorporate dust suppression or dust extraction attachments designed to collect asbestos fibres;

(c) using only vacuum cleaning equipment designed to collect asbestos fibres or wetting the area before sweeping up material containing asbestos;

(d) not using a high pressure water jet, or compressed air, unless in a manner which adequately prevents asbestos fibres entering the atmosphere and which is approved in writing by the Executive Director, Public Health;

(e) ensuring, so far as is reasonably practicable, that material containing asbestos is not broken or abraded; and

(f) ensuring that waste material containing asbestos is disposed of in accordance with the Environmental Protection (Controlled Waste) Regulations 2000 as soon as practicable.

Customs Act 1901 (Cth)

Commonwealth customs legislation prohibits the importation of asbestos or goods containing asbestos into Australia.

Section 50(1) of the *Customs Act 1901* (Cth) provides that the Governor General may, by regulation, prohibit the importation of goods into Australia.

Regulation 4C of the Customs (Prohibited Imports) Regulations 1956 (Cth) prohibits the importation of all forms of asbestos and goods containing asbestos. Regulation 4C (3) expressly prohibits the importation of chrysotile asbestos.

Trade Practices Amendment (Australian Consumer Law) Act (No. 2) 2010 (Cth) (ACL)

The ACL provides a legislative framework for the transactions of goods and services.

In particular it refers to consumer transactions under Part 3-2. Section 54 sets out acceptable quality of goods provided. If *'a person supplies, in trade or commerce, goods to a consumer… there is a guarantee that the goods are of acceptable quality'*. Section 54(2) provides that goods are of acceptable quality if they are *'fit for all the purposes for which goods of that kind are commonly supplied… acceptable in appearance and finish… free from defects… safe and durable.'*

Section 55 provides that if a supplier supplies goods to a consumer *'there is a guarantee that the goods are reasonably fit for any disclosed purpose, and for any purpose for which the supplier represents that they are reasonably fit.'*

Sections 56 and 57 provide guarantees that *'the goods correspond with the description'* (section 56) and that the goods, if supplied in reference to a sample or demonstration model, there is a guarantee that the goods correspond with the sample or demonstration model in quality, state or condition; the consumer will have a reasonable opportunity to compare the goods with the sample; the goods are free from any defect that would not be apparent on reasonable examination of the sample or demonstration model and would cause the goods not to be of acceptable quality (section 57).

Note that this is only applicable to circumstances where the transaction is a supply to a consumer as defined in section 51.

The ACL addresses what actions may be taken if these guarantees are broken under Part 5-4. This provides that if the failure of the goods is determined to be a 'major failure' (as set out in section 260), then the consumer may:

- notify the supplier that the consumer rejects the goods and of the ground or grounds for the rejection; or
- recover compensation for any reduction in the value of the goods below the price paid or payable by the consumer for the goods; or
- recover damages for any loss or damage suffered by the consumer because of the failure to comply with the guarantee if it was reasonably foreseeable that the consumer would suffer such loss or damage as a result of such a failure (subject to certain sub-clauses).

The Building Commissioner's auditing powers

Building Services (Complaints Resolution and Administration) Act 2011

Section 86(i) of the *Building Services (Complaint Resolution and Administration) Act 2011* (CRA Act) provides that one of the functions of the Building Commissioner is to audit the work and conduct of registered building services providers.

Section 60 allows the Building Commissioner to designate —

(a) a public service officer; or

(b) a person employed or engaged under the *Public Sector Management Act 1994* section 100 by the employing authority of the Department, as an authorised person for the purposes of this Act.

Section 64 of the CRA Act provides that an authorised person may carry out an inspection for compliance purposes, which includes monitoring whether a building service Act has been, or is being, complied with.

Section 65(1) of the CRA Act provides that an authorised person may inspect any building or building service that has been or is being carried out to ascertain any or all of the following –

(a) how building services have been or are being carried out;

(b) how building standards (as defined by the *Building Act 2011*) have been or are being applied;

(c) whether a building service is operating effectively.

Section 88 of the CRA Act allows the Building Commissioner to publish (in any form) a statement identifying or giving warnings or information about any building services carried out in an unsatisfactory or dangerous manner.

Building Commission auditing team

The Building Commission established a team of building surveyors, a technical officer, a senior investigator and support staff to carry out the audit of the PCH.

WorkSafe provided a principal scientific officer and an operational director to assist the audit team.

The building surveyors hold Level 1 (unrestricted) building surveyor practitioner registrations and have relevant experience in the assessment and approval of class 2 to 9 (commercial and industrial) buildings.

The technical officer holds a Level 2 building surveyor registration and is experienced in the assessment of class 2 to 9 (commercial and industrial) buildings.

The audit was overseen by the Audit Manager and Director of the Compliance Directorate of the Building Commission.

Audit process

This interim report addresses three aspects of the audit: the management of, and response to, the confirmation of asbestos; the procurement processes that allowed the URPs containing asbestos to arrive on site and be installed; and the remedial action planned and taken to ensure the PCH will ultimately be safe and suitable for use.

1. The review of the effectiveness of the management of the asbestos incident was primarily carried out by Comcare and WorkSafe, which advised the Building Commission on their processes and findings. This information is included in this interim report.
2. The review of the product procurement processes was carried out by the Building Commission. It considered the supply chain from inception through to the installation of the URPs at the PCH, and identified how the asbestos came to be present.
3. The review of the remediation of the URPs involved the Building Commission and WorkSafe assessing the remediation plan proposed by John Holland to ensure the asbestos removal and remediation is carried out in a safe and appropriate manner and that John Holland has arrangements in place to verify that the URPs are fit-for-purpose.

Interviews with stakeholders

The Building Commission conducted a number of site visits to the PCH to understand key aspects of the project that were to be audited and to discuss the construction processes with key stakeholders (see Figure 2).

The Building Commission consulted with:

- John Holland
- Department of Treasury – SP&AS (WA)
- Yuanda (Aus)
- WorkSafe
- Comcare
- Construction, Forestry, Mining and Energy Union (CFMEU)
- Philip Chun & Associates Pty Ltd (building surveyors)
- John Massey Group (building surveyors)

Auditing relevant documentation

Building Commission officers were provided with access to a comprehensive range of relevant documents, including direct electronic access to information held by SP&AS.

The Building Commission examined documents from John Holland's records systems, Yuanda (Aus) records systems and from SP&AS.

The following types of documents were reviewed during the audit:

- Relevant contract documents (these are commercial in confidence)
- Emails and correspondence generally
- Plans
- Specifications
- Engineering details
- Certificates
- Inspection reports
- Product test results

- Proposed remediation plan(s)
- Laboratory test results (asbestos)
- Technical building code reports from Philip Chun & Associates – consulting building surveyor to John Holland
- Performance building code reports from Norman Disney and Young – consulting fire engineer to John Holland
- Department of Fire and Emergency Services (DFES) – referral agency documents

Liaising with government agencies

Building Commission officers liaised with:

- The Heads of Workplace Safety Authorities Working Group on Imported Asbestos, via the Rapid Response Protocol
- WorkSafe
- Comcare
- Department of Health
- Department of Treasury
- Australian Border Force

WorkSafe was advised that work health and safety regulators in New South Wales, Queensland, South Australia and Victoria were liaising with building owners and managers, as well as Yuanda (Aus), in relation to testing Yuanda (Aus) products in those states.

Details of the audit

Following the Building Commissioner's announcement on Friday 15 July 2016, the audit team was established to undertake the audit of the PCH.

Preliminary meetings were initiated with John Holland and SP&AS to officially advise that a comprehensive audit would be undertaken.

A scope of required documentation was developed by the audit team, which led to the request for documentation from John Holland, SP&AS and Yuanda (Aus). Concurrently, the Building Commission conducted regular meetings with WorkSafe to exchange relevant information on the progress of the audit.

The audit team liaised with other government jurisdictions and agencies to ensure a comprehensive, whole-of-government response.

Site visits were carried out at the PCH by Building Commission officers to view the asbestos site and to discuss the response with John Holland and SP&AS representatives.

Separate meetings were held with John Holland and Yuanda (Aus) as required, in addition to other ongoing communication.

The documentation received from John Holland, SP&AS and Yuanda (Aus) was analysed in detail by the audit team.

The plans and specifications relevant to the URPs were considered against the corresponding provisions of the National Construction Code (NCC) and other relevant laws. The key areas of analysis were design process, product procurement (including product conformity) and quality of the documentation. The audit team also reviewed the project documents for due diligence in relation to the URPs in terms of evidence for quality assurance and quality checking systems.

The audit team and WorkSafe reviewed all available test documents that pertained to the asbestos findings.

Management of asbestos event

In examining how the management of the response to the confirmation of asbestos contamination was dealt with, the Building Commission worked closely with WorkSafe, including regular briefings and updates in relation to test results. In turn, WorkSafe were in contact with the Commonwealth Government agency, Comcare, which became involved with the asbestos incident because John Holland and its parent company, John Holland Group, are self-insured licensees, covered by the WHS Act.

WorkSafe is the principal regulator for asbestos in WA workplaces, with the exception of Commonwealth and resource sector projects.

The Building Commission has examined the management of the response to finding asbestos at the PCH in conjunction with WorkSafe.

Discovery of asbestos at PCH

On Tuesday 12 July 2016, workers on site alerted John Holland managers to their concerns about the potential for asbestos contamination in the cement sheeting inside the URPs and that they had retained a sample of the sheeting. This followed media reports about asbestos in gaskets supplied by Yuanda (Aus) at a building site at 1 William Street, Brisbane. 'Gasket' is a general term for a type of building component. Yuanda (Aus) advised that these components were packer/isolator material with the product name 'Klingerit 200'. In response, John Holland staff checked the approved documentation clearing the URPs for use, including the original test results. The test report stated that the product name of the cement sheeting in the URPs was 'autoclaved cellulose fibre cement flat sheet (non-asbestos)' (see Figure 5). Nevertheless, John Holland decided to test a piece of fibre cement sheet for asbestos locally.

By late afternoon on Tuesday 12 July 2016, tests performed by the NATA-accredited testing facility ARL confirmed the presence of chrysotile (white) asbestos. At 9.30pm the site was cleared of all workers.

An exclusion zone was established on levels seven and eight directly under the area where the URPs were cut. On the morning of Wednesday 13 July 2016, restricted licensed asbestos removalist L & M Painting Service (L & M Painting) began erecting an exclusion zone by constructing temporary walls of heavy duty plastic sheeting to contain dust. Access to the zone was restricted to authorised personnel only. John Holland engaged an industrial hygienist from Indoor Air Quality Solutions (IAQS) to undertake controlled bulk testing, by sampling and testing a physical piece of the sheeting, as well as air and surface testing.

The controlled samples of cement sheeting collected by IAQS were delivered to ARL for testing on the night of Tuesday 12 July 2016. NATA-accredited occupational and environmental consultants, Lancall Nominees Pty Ltd (Lancall), undertook air monitoring. Mid-morning on Wednesday 13 July 2016 the controlled samples tested positive for asbestos while the airborne testing results were below the detection limit and thus well below occupational exposure limits.

All staff commencing work on Wednesday 13 July 2016 were briefed in relation to the asbestos incident and given details of the exclusion zones. Security guards were positioned to ensure containment areas were secure.

At 6.30am Focus Demolition and Asbestos Removalists (FDAR), an unrestricted asbestos licence holder, arrived on site to supervise the erection of the exclusion zone and to commence the clearing and decontamination of the incident area. John Holland engaged FDAR to undertake this work.

At 8.00am, John Holland provided workers and staff who were identified as at risk of being exposed to asbestos with information about the potential health impact and processes in

place to manage potential contamination of tools, clothing, vehicles and other personal items. Such information sessions were held periodically thereafter to ensure all concerned staff and subcontractors had an opportunity to attend. Concerned staff and subcontractors were invited to submit their belongings (such as tool boxes or vehicles) to be tested for asbestos dust.

On Friday 15 July 2016, the CFMEU received test results of a sample it had sent for analysis, confirming the presence of chrysotile asbestos.

On Monday 18 July 2016, John Holland arranged a site visit for stakeholders including representatives from the Child and Adolescent Health Service, the CFMEU and occupational hygienists.

An asbestos exposure register was created by John Holland for workers concerned they may have been exposed.

John Holland engaged Coffey Corporate Services Pty Ltd (Coffey), an independent, NATA-accredited, consultant, to review the decontamination and testing work done so far, provide additional testing, supervise further decontamination as needed, and to provide necessary clearance certification(s).

John Holland also developed a new work procedure that required pre-approval for any work that involved the penetration of materials. This procedure was developed and implemented from Tuesday 19 July 2016. The procedure involves an individual risk assessment of the materials involved in the work to be carried out. When an assessment identifies a potential risk, the material is to be tested prior to a permit being granted. This process is to be applied if a worker raises a concern, irrespective of the risk assessment carried out under the procedure.

Air, surface and bulk testing for asbestos

Between Tuesday 12 July 2016 and Friday 29 July 2016, the PCH was the subject of individual asbestos test samples, including laboratory testing. John Holland confirmed that further testing was done in addition to the 280 tests shown below. The details of these additional tests will be included in the final report.

These tests included surface tests, bulk sample tests and air sample tests.

Bulk sample tests

A bulk sample in this context is a piece of the building material to be tested. There were 25 bulk sample tests conducted, with 14 indicating a positive result for asbestos. All but one of these were fibre cement samples. The exception was a sample of synthetic mineral fibre (SMF) insulation (a batt); however it is considered that the positive result for the SMF insulation was due to dust generated by cutting of the fibre cement as the batt was adjacent to the new fan installation area.

The following table is a list of the test reports analysed:

Table 1: Bulk sample test reports

Date of report	Laboratory	Report no.
12 July 2016	ARL	16-05143
13 July 2016	ARL	16-05146
13 July 2016	Lancall	LL422378
15 July 2016	Lancall	LL422387

Date of report	Laboratory	Report no.
15 July 2016	Lancall	LL422389
26 July 2016	Lifetree Environmental	BA1623
28 July 2016	ARL	16-05629

Air testing

An air test is conducted by pumping a known volume of air through a filter, which collects fibres. The filter is analysed in a laboratory. Air testing is used to assess health risk.

There were 24 air tests conducted. All results were below the detection limit of the method and as such, well below the workplace exposure standard for asbestos in air.

The following table is a list of the test reports analysed:

Table 2: Air test reports

Date of report	Laboratory	Report no.
13 July 2016	Lancall	LL422375
14 July 2016	Lancall	LL422380
15 July 2016	ARL	16-0251
18 July 2016	Coffey	ENAUPERT05572AA
19 July 2016	Coffey	ENAUPERT05572AA
28 July 2016	Coffey	ENAUPERT05572AA
29 July 2016	Coffey	ENAUPERT05572AA

Surface sample tests

A surface sample is a sample of settled dust collected on a tape, wipe or gel. Surface samples are indicators of cleanliness, rather than indicators of health risk.

There were 231 surface sample tests conducted, with five indicating a positive result for asbestos. All of these positive results were found at level eight within the containment area, during the containment period, except for one fragment which was found at the same time, located close to the containment area, but externally within an adjacent box gutter. This was a 3mm x 1.5mm (approximately) loose chrysotile asbestos bundle that was not considered respirable by the testing laboratory.

The following table is a list of the test reports analysed:

Table 3: Surface test reports

Date of report	Laboratory	Report no.
13 July 2016	ARL	16-05146
13 July 2016	Lancall	LL422377
14 July 2016	ARL	16-05205
16 July 2016	Lifetree Environmental	BA1574
16 July 2016	Lifetree Environmental	BA1575
16 July 2016	Lifetree Environmental	BA1576
16 July 2016	Lifetree Environmental	BA1579
17 July 2016	Lifetree Environmental	BA1572
17 July 2016	Lifetree Environmental	BA1573
17 July 2016	Lifetree Environmental	BA1577
17 July 2016	Lifetree Environmental	BA1578
18 July 2016	ARL	16-05301
18 July 2016	ARL	16-05308
18 July 2016	Lifetree Environmental	BA1580
18 July 2016	Lifetree Environmental	BA1582
18 July 2016	Lifetree Environmental	BA1583
19 July 2016	ARL	16-05331
19 July 2016	ARL	16-05332
19 July 2016	Lifetree Environmental	BA1591
19 July 2016	Lifetree Environmental	BA1592
19 July 2016	Lifetree Environmental	BA1593
20 July 2016	Lifetree Environmental	BA1597
20 July 2016	Lifetree Environmental	BA1599
20 July 2016	Lifetree Environmental	BA1600
21 July 2016	Lifetree Environmental	BA1606
22 July 2016	ARL	16-05486

WorkSafe and Comcare

On Wednesday 13 July 2016, Comcare inspectors attended the PCH site where they liaised with representatives from John Holland. After review, Comcare was satisfied that the control measures John Holland had implemented to mitigate the immediate risks of asbestos exposure were sufficient to ensure the health and safety of workers.

On Thursday 14 July 2016, Comcare returned to the site with WorkSafe directors to assess asbestos containment and decontamination measures and ensure safety measures were in place.

On Friday 15 July 2016, WorkSafe requested information from John Holland, including a list of workers potentially exposed to asbestos. WorkSafe also informed the Asbestos Safety and Eradication Agency (ASEA) and members of the Heads of Workplace Safety Authorities (HWSA) Imported Materials with Asbestos Working Group of the confirmed asbestos finding.

On Monday 18 July 2016, WorkSafe requested that John Holland develop a Safe Work Method Statement to prevent potential contact with any ACM onsite. Also, all sub-contractors were required to notify WorkSafe of any exposure to asbestos under OSH Regulation 5.40.

On Tuesday 19 July 2016, WorkSafe staff met with health and safety personnel from John Holland and inspected the area of concern. WorkSafe considered the access arrangements for State Government employees within the hospital and noted the arrangements to restrict government staff to specific areas to allow for training, orientation, commissioning and testing activities. These areas were away from the incident area.

WorkSafe liaised with subcontractors in relation to ensuring that record keeping, notification to WorkSafe, consultation and health surveillance requirements were met. WorkSafe also liaised with the subcontractor involved in the URP installation in relation to any previous activities that may have released asbestos containing dust.

A WorkSafe director attended the site on Monday 25 July 2016 with Comcare for a follow up site inspection to review the progress of the decontamination work.

WorkSafe also met with the Department of Treasury and Yuanda (Aus) in relation to systems of sourcing materials for the PCH.

On Monday 1 August 2016, WorkSafe received a copy of the clearance certificates issued by Coffey and reviewed by IAQS, for the areas of the PCH where the incident occurred. The clearance certificates certify the incident areas are cleaned, decontaminated and safe for occupation.

WorkSafe is continuing to liaise with John Holland and the licensed asbestos removalist in relation to the remediation of the affected URPs.

On Monday 8 August 2016, WorkSafe issued a Safety Alert on asbestos in imported building materials.

Yuanda (Aus)

After being notified of the presence of asbestos in the URPs, Yuanda (Aus) engaged work health and safety consultants, Occsafe Australia Pty Ltd (Occsafe), to manage the testing of all Yuanda (Aus) products installed in buildings other than the PCH. The scope of the testing extends to all buildings, both existing and those under construction, within Australia, sampling all known instances of Yuanda (Aus) products. Yuanda (Aus) has advised that this will involve testing products in 68 buildings, of which 14 are located in WA.

Occsafe, as the principal consultant to Yuanda (Aus), engaged state-based subcontractors to collect samples on-site and then deliver the samples to a NATA-accredited laboratory for testing.

Yuanda (Aus) was not on the PCH site at the time of the asbestos incident, did not take part in the initial response to the asbestos event and was not involved in the testing undertaken by John Holland. The audit team was advised that Yuanda (Aus) would have no involvement in the remediation of the URPs. However, the audit team has been informed that Occsafe will have access to the site from September 2016 to ensure appropriate testing is carried out.

Yuanda (Aus) has undertaken to provide WorkSafe and the Building Commission with the relevant documentation to show the number, type and results of the testing performed, for the WA buildings. This information will be discussed in the final report.

Australian Border Force

The Australian Border Force (ABF) is investigating Yuanda (Aus) in relation to the asbestos events in WA and Queensland. The ABF has ordered independent testing on Yuanda products entering Australia and ABF is working with Yuanda, its suppliers and customers, to ensure all products entering Australia comply with the ban on asbestos.

Procurement process

Background

John Holland was the main contractor to the WA Government for the PCH with responsibility for design and construction of the building and contracted Aurecon Australia Pty Ltd (Aurecon) to provide a façade design brief. Aurecon worked with John Holland's building surveyor to ensure NCC compliance.

Once the design brief was completed and assessed against the NCC, John Holland commenced a tender process, confirming Yuanda (Aus) as the preferred façade designer and supplier and awarded Yuanda (Aus) the contract. Part of this contract was to provide the URPs.

In sourcing components for the URPs, Yuanda (Aus) parent company Yuanda China used an agent, Shenyang Dingyisheng Business Trading Co Ltd (SDBT), to source fibre cement sheets from Zhejiang Headerboard Building Materials Co Ltd (Headerboard). These were the components that were found to contain asbestos.

The audit received information from John Holland and Yuanda (Aus) that detailed their procurement plans.

John Holland procurement management plan

John Holland has a procurement plan for the PCH and provided it to SP&AS. It sets out an approach to procure subcontractors and materials. In relation to the façade works, John Holland contracted the subcontractor, Yuanda, to supply the materials rather than procuring the materials directly. John Holland's contractual requirements in relation to the façade works explicitly drew Yuanda's attention to the laws prohibiting the use of ACM and required compliance with these laws.

John Holland provided a tender report (commercial in confidence) on the façade works package to SP&AS. The report, dated 6 October 2012, detailed the tender process that John Holland undertook to engage Yuanda (Aus) as its façade contractor.

According to the tender report, the tender was for the PCH building facades, comprising 12 façade types, including the atrium roof.

John Holland preselected tenderers by assessing:

- financial stability in conjunction with project size and annual turnover;
- ability to complete the entire façade works from concept to handover, in particular detailed design whilst working with John Holland to control costs;
- technical competency and the ability to deliver all façade types (ie unitised, curtain wall etc.);
- manufacturing and installation capacity; and
- willingness to accept contract terms and conditions whilst working with John Holland to achieve a successful project.

With this in mind, John Holland assessed active subcontractors in the international market and contacted 12 companies in total, supplying them with an expression of interest form for the PCH. Four potential contractors were provided an 'Invitation to Tender' on 6 July 2012. John Holland then determined that Yuanda (Aus) was the preferred tenderer.

Yuanda (Aus) procurement

Yuanda (Aus) gave the audit team a Project Quality Plan for the PCH which specifies quality management processes for façade design, installation and materials for this project. The Project Quality Plan stated it was prepared in accordance with ISO 9001.

Yuanda (Aus) ordered the URPs from Yuanda China. Yuanda China sourced the URP components from various suppliers for assembly in its factory. Yuanda China contracted SDBT to supply Headerboard non-asbestos fibre cement sheets (see Figure 3). Documents provided to the audit team by Yuanda (Aus) showed that Yuanda China ordered from SDBT 'autoclave non-asbestos cellulose fibre cement plate', manufactured by Headerboard (see Figure 4). Yuanda China has advised Yuanda (Aus) which then advised the audit team that Headerboard does not manufacture or supply ACM. A review of Headerboard's website did not indicate it supplied ACM products.

Yuanda (Aus) has advised that Yuanda China has reviewed the supply and now suspects that SDBT sourced the fibre cement sheets from a different manufacturer and this may account for these sheets having been found to contain asbestos.

Figure 3: Yuanda (Aus) suppliers and subcontractors

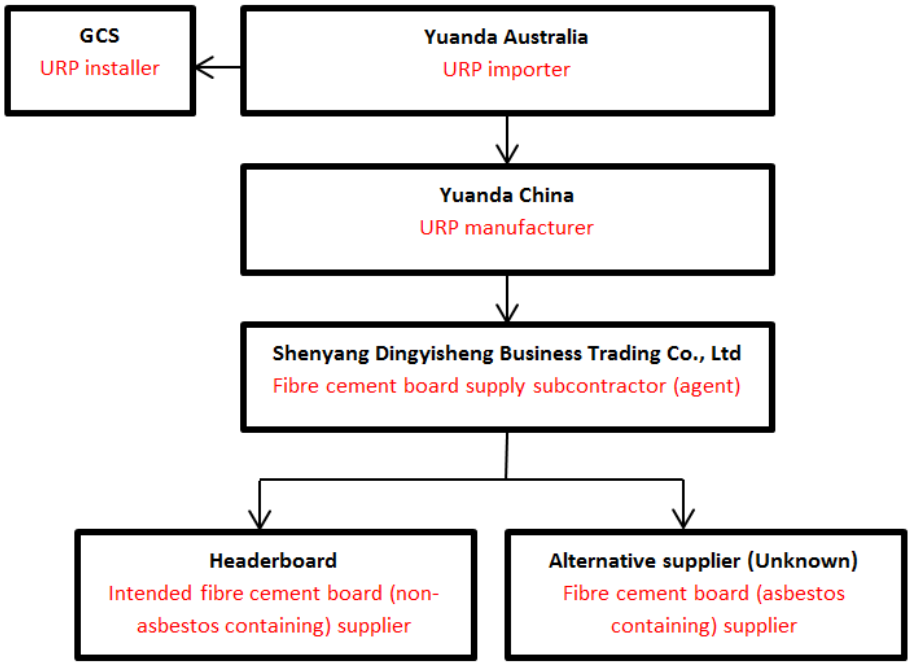
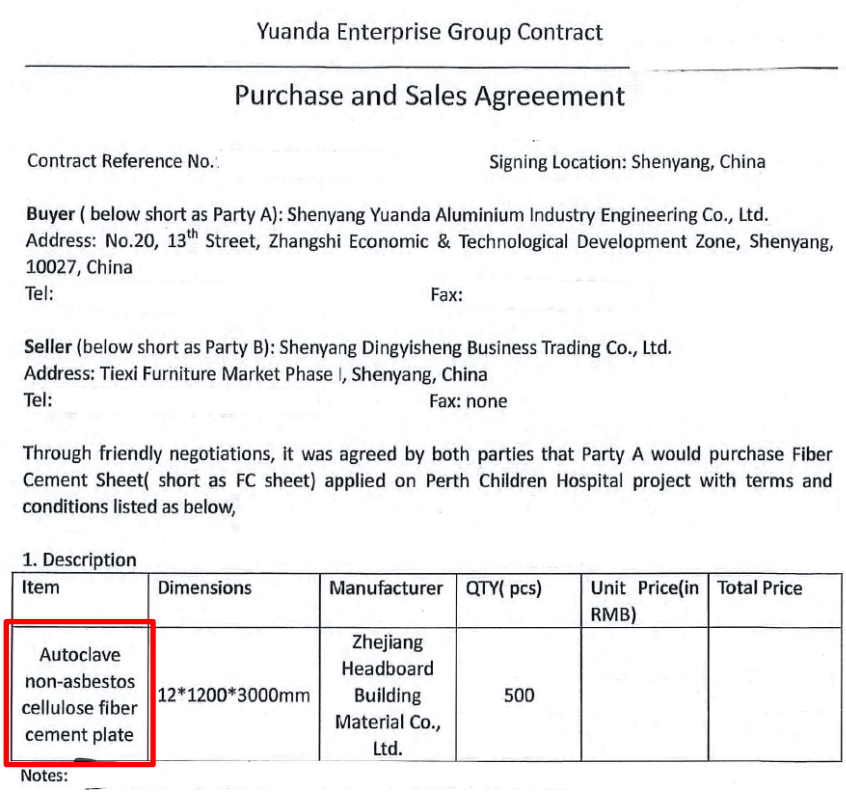


Figure 4: Yuanda purchase and sales agreement



Yuanda Enterprise Group Contract

Purchase and Sales Agreeement

Contract Reference No.: Signing Location: Shenyang, China

Buyer (below short as Party A): Shenyang Yuanda Aluminium Industry Engineering Co., Ltd.
Address: No.20, 13th Street, Zhangshi Economic & Technological Development Zone, Shenyang, 10027, China
Tel: Fax:

Seller (below short as Party B): Shenyang Dingyisheng Business Trading Co., Ltd.
Address: Tiexi Furniture Market Phase I, Shenyang, China
Tel: Fax: none

Through friendly negotiations, it was agreed by both parties that Party A would purchase Fiber Cement Sheet(short as FC sheet) applied on Perth Children Hospital project with terms and conditions listed as below,

1. Description

Item	Dimensions	Manufacturer	QTY(pcs)	Unit Price(in RMB)	Total Price
Autoclave non-asbestos cellulose fiber cement plate	12*1200*3000mm	Zhejiang Headboard Building Material Co., Ltd.	500		

Notes:

In addition, Yuanda (Aus) advised that Yuanda China conducted an investigation in relation to the non-compliant components of the URPs. During this investigation Yuanda China provided information to Yuanda (Aus) indicating that URPs were manufactured with either a fibre cement sheet or, contrary to the specification, a plasterboard sheet component, and that URPs of both types were installed at the PCH. The rationale for the inclusion of the plasterboard is unclear at time of publication. However, it is known that the URPs were assembled at Yuanda China and the product substitution occurred at that stage. The information supplied in relation to plasterboard content in some URPs was verified by John Holland during the URP remediation process.

Remediation plan

John Holland advised that it has considered a number of remediation options, including:

1. replacing the URPs in their entirety with new, asbestos-free URPs;
2. removing the URPs, taking them to a controlled off-site environment and replacing the asbestos containing components at that location prior to re-installing the URPs; and
3. replacing the asbestos containing components in-situ with appropriate controls in place.

Each option had advantages and disadvantages, and John Holland decided that the third option would be preferred if it was technically feasible. John Holland undertook an on-site trial of its proposed remediation methodology on Friday 12 August 2016. This consists of a 'top-down' approach, whereby the URP is deconstructed from the top of the URP, the outer aluminium skin is removed, then the insulation batts and then finally the asbestos-containing fibre cement sheets are removed. The URP shells are cleaned and rebuilt with new materials to the specification.

John Holland and its consultants and subcontractors, Coffey, FDAR, GCS and Aurecon, considered this was the safest way to remediate the panels. The trial demonstrated this option met technical and safety and health requirements.

The remediation work will be conducted by a licensed asbestos removalist (FDAR) and in accordance with the Code of Practice for the Safe Removal of Asbestos (2005). Safe work methods will ensure that the asbestos work is restricted to the immediate work area and will not affect the remainder of the site. This is supported by the information obtained during the trial. Disposal of the asbestos material will be to a landfill site with a licence to receive asbestos waste, in accordance with the requirements of the Department of Environment Regulation.

John Holland has advised that the remediation work is anticipated to take a number of weeks. The work commenced in early September 2016.

Preliminary findings

Management of asbestos event

John Holland appropriately managed the response after asbestos was confirmed; but the task risk assessment process and work to create the openings should have more clearly and effectively addressed the dust hazard.

John Holland acted quickly following concerns about possible ACM to isolate and secure the incident area. This minimised the risk of asbestos contamination to other parts of the site. John Holland organised for information to be provided to concerned people about asbestos, and provided stakeholders with an opportunity to see the containment and decontamination systems in place.

The actions of the ABF in holding Yuanda (Aus) imports at the border pending test results provided assurances for other workplaces in relation to Yuanda (Aus) building materials. WorkSafe's communication with other jurisdictions as a member of the Heads of Workplace Safety Authorities Imported Materials with Asbestos Working Group helped inform those jurisdictions in relation to the affected material.

The substantial occupational hygiene bulk sampling, surface testing and air monitoring conducted at the PCH by independent consultants provides assurance that the containment of asbestos to the affected area was successful.

Full decontamination was achieved and verified by late July 2016. This included a clearance, with associated testing, for Plant Rooms 1, 2 and 9 on level eight, as well as the incident area. The clearance data provides assurance to all users of the site that the decontamination was complete and successful. Air monitoring was carried out on levels seven and eight, and in other areas of the PCH. All of the results were less than 0.01 fibres/mL, which is the reporting limit for the air monitoring method used in Australia. Analysis of settled dust sampling throughout the PCH found asbestos fibres within the contained areas where the incident occurred, but not in other areas such as plant rooms, air conditioning system, lift wells, crib rooms and workers' belongings and vehicles.

After examining the response to the asbestos incident, Comcare has stated that it is satisfied with the actions and testing undertaken by John Holland and will not ask for further action to be taken. Comcare is undertaking ongoing review and monitoring of the remediation process.

Workers who may have been exposed to asbestos containing dust were provided with the opportunity to attend an information session on asbestos hazards provided by an occupational hygienist on behalf of John Holland. Workers were also provided with the opportunity to attend a medical assessment (health surveillance) and the names of exposed workers were provided to WorkSafe.

While the waste material generated from the cutting activity was not segregated from other building waste, the Department of Environment Regulation liaised with the waste disposal contractor to ensure that all affected waste was handled safely and sent to a suitably licensed waste facility.

As the URPs were installed in 2014, WorkSafe made enquiries to establish whether there had been any work with the URPs between 2014 and July 2016 which may have resulted in workers being exposed to airborne asbestos fibres. GCS advised that two earlier tasks had been conducted with the URPs:

- The first task was in mid-2014, when some cutting to the edge of a small number of panels was conducted. The cutting was reported to be shallow with no disruption to

the fibre cement sheet and there has been no evidence to suggest that the modification(s) resulted in any uncontrolled escape of any substance; and

- The second task, in August 2015, involved a repair to a water damaged panel. According to GCS that carried out the work, the wet fibre cement sheeting was removed from the panel without cutting or dust generation and GCS did not consider that the modification resulted in a "dangerous incident" as defined by section 37 of the WHS Act.

The information provided indicates both tasks were very low risk in terms of potential asbestos exposure.

It is worth noting that the URPs are closed units and the asbestos containing components are internal. There is effectively no risk that the asbestos could have escaped into the environment or building, unless disturbed. No other incidents have been reported to the knowledge of the audit team.

Work done to make the openings created a substantial amount of dust in the air and on surfaces around the work area. Construction dust, even without asbestos content, can present a health hazard and should be controlled. According to information provided, while GCS had prepared a Task Risk Assessment (TRA) for the roof work, the TRA was based on that used for the roof installation, and as such did not address dust hazards. Had a dust hazard been identified during the TRA, dust controls such as on-tool dust extraction or tools that create less dust should have been used and may have reduced the severity and extent of the asbestos incident. TRAs for this site were to be reviewed by John Holland; however the document does not indicate that this occurred.

Product procurement

1. The procurement processes used by John Holland were comprehensive and consistent with industry practice.
2. The manufacturing process used by Yuanda allowed non-specified and non-conforming products to enter the supply chain.

The Building Commission was able to establish, from interviews and analysis of documents that were requested from John Holland and Yuanda (Aus), that the following process was used in the procurement of the URPs.

John Holland

- As part of John Holland's procurement management, the subcontract between John Holland and Yuanda (Aus) 'Façade works package 17' required that Yuanda (Aus) must not supply, use or install asbestos or ACM. This shows that there was a specific requirement, under contract, for Yuanda (Aus) to ensure that all materials did not contain asbestos.
- John Holland procured Aurecon as the roof façade design engineers that were also required to provide third party quality assurance and quality checking for the façade components.
- John Holland retained the services of Philip Chun & Associates as building surveyors to ensure compliance against the provisions of the NCC.
- As part of John Holland's purchasing system, each building product goes through an acceptance process. This includes the examination of a sample of the building component that will make up the building product. The sample of fibre cement sheeting used in the URP was provided by Yuanda (Aus) early in the project. John Holland signed off on the sample on 25 January 2013; however, it was not tested for asbestos at that time. In July 2016, after the asbestos incident, it was tested for

asbestos and found to not contain asbestos. The audit team was not able to conclusively ascertain the manufacturer or origin of the original product sample.

Yuanda

- Yuanda (Aus) advised at a meeting with members of the audit team that they have separate, China-based, facilities, each focused on major foreign market segments to ensure compliance with each market's domestic laws.
- Yuanda China's production of the URPs was based on the Aurecon 'Façade Performance Specification' and prototype testing.
- Yuanda (Aus) facilitated a series of factory-based checks, conducted at the Yuanda China factory, undertaken by Australian-based stakeholders including representatives from John Holland, SP&AS, Aurecon and Arup (façade engineer for SP&AS).
- The fibre cement sheeting product was described as 'non-asbestos' in the test report provided to stakeholders.
- Yuanda (Aus) relied upon Yuanda China's procurement processes to source the URPs.
- In turn, Yuanda China relied upon SDBT to source the fibre cement sheet component from a specified manufacturer (Headerboard).
- SDBT may not have sourced the fibre cement sheet from the specified manufacturer.
- Yuanda (Aus) advised that information from Yuanda China confirms that the URPs were made with either a fibre cement sheet component or a plasterboard component. Yuanda China commenced production of URPs using plasterboard until advised this was not consistent with the specification. Following batches were produced with fibre cement sheeting.
- Plasterboard is not consistent with the Aurecon Façade Performance specifications, but was used in the prototype. According to Yuanda China's information, URPs containing both types of board or sheet were installed at the PCH.

The Building Commission found no evidence of a specific asbestos testing regime by Yuanda. However, the procurement trail illustrates that John Holland and Yuanda (Aus) sought the supply of a 'non-asbestos' fibre cement sheet. John Holland's sub-contract with Yuanda clearly required Yuanda to provide evidence that its products were asbestos-free.

The test report in Figure 5 was provided by Headerboard and cites the product name as 'Autoclaved Cellulose Fibre Cement Flat Sheet (non-asbestos)'. The tests reported are for the mechanical properties of the sheet against the standards expected for a fibre cement sheet but did not test specifically for asbestos. Therefore, there is no test result for the presence of asbestos. However, John Holland relied on this document as demonstrating that the URPs were free of asbestos.

Because of the uncertainty of the supply of fibre cement sheeting to Yuanda China by SDBT it is not known if this test report was for:

- fibre cement sheeting manufactured by Headerboard, but not the batch supplied by SDBT; or
- fibre cement sheeting containing asbestos supplied by SDBT, but tested against the standards for 'non-asbestos' fibre cement.

Figure 5: Extract of Autoclaved Cellulose Fibre Cement Flat Sheet – Test Report showing product name. Red highlighting added.

2010000735M

(2010)建材质监认字(03)号

№.119120

检 验 报 告

TEST REPORT

产品名称：压蒸无石棉纤维素纤维水泥平板
PRODUCT NAME: Autoclaved Cellulose Fiber Cement Flat Sheet(Non-asbestos)

委托单位：浙江汉德邦建材有限公司
CUSTOMER: Zhejiang Headerboard Building Materials Co.,Ltd.

生产单位：浙江汉德邦建材有限公司
MANUFACTURER: Zhejiang Headerboard Building Materials Co.,Ltd.

检验类别：抽 样 检 验
TEST MODE: Sampling Inspection

国家建筑材料工业
装饰装修建筑材料质量监督检验测试中心
QUALITY SUPERVISION AND INSPECTION CENTER OF NATIONAL BUILDING MATERIALS INDUSTRY FOR DECORATING AND FINISHING BUILDING MATERIALS

二〇一一年十二月二十六日
Dec. 26, 2011

What went wrong?

The URP was a one-off Yuanda product that was produced specifically for the PCH. Yuanda's core business is the manufacture and supply of wall façade products. Yuanda advised that as URPs were a bespoke product, it relied on a third party company, SDBT, to supply the autoclaved cellulose fibre cement sheeting component.

Yuanda (Aus) advised that bulk products coming into the Yuanda China factory environment are not tested for asbestos as the majority of their standard components, for example, glass, aluminium and steel, are not known to contain asbestos. The acoustic specification for the URPs required the addition of autoclaved cellulose fibre cement sheeting to reduce noise from the helipad.

Laws concerning the use of asbestos differ across the world, with only 55 countries banning the import and/or use of asbestos containing products. A potential reason that asbestos was present in the fibre cement sheeting is due to Chinese regulations allowing asbestos in its building materials. Some Chinese manufacturers produce both asbestos containing and non-asbestos product lines and therefore there is the potential for the wrong products to be supplied.

Yuanda (Aus) relied upon Yuanda China's procurement processes to source the URPs. In turn, Yuanda China relied upon SDBT to source the fibre cement sheet component from a specified manufacturer (Headerboard). SDBT may not have sourced the fibre cement sheet from the specified manufacturer. Yuanda (Aus) and Yuanda China quality management in this instance appears to be deficient as not only were asbestos containing fibre cement sheets used, but plasterboard was also used and this was not in accordance with the specifications. Neither of these URP components was consistent with the non-asbestos fibre cement sheet product sample supplied early in the procurement process.

The product description of 'autoclaved cellulose fibre cement sheet (non-asbestos)' on the test report appears to have been accepted at face value at all points along the supply chain. The test report covers the mechanical and water absorption properties of the sheeting, not its composition. Fibre cement sheeting made without asbestos has different properties from sheeting made with asbestos. The product description ('non-asbestos') indicates the standard against which the properties were tested. It appears to the audit team that this product description created an assumption that the product did not contain asbestos and therefore no specific testing for asbestos was done elsewhere in the supply chain.

Building legislation is silent on the subject of ACM, which may explain why a specific test for asbestos was not carried out. However, there are other relevant laws that regulate asbestos (see section 5).

Remediation plan

The remediation plan proposed by John Holland includes safe and suitable processes to replace affected components within the URPs and verification that they will be fit-for-purpose.

Information received in relation to the remediation plan indicates that the proposal has been prepared in accordance with the Code of Practice for the Safe Removal of Asbestos (2005) and, as such, the asbestos removal work will be contained to the removal area and should not impact the rest of the site.

Documentation and briefings provided give assurance that the remediation plan provides a suitable basis for rectifying the roof. This will be achieved by the complete removal of asbestos contamination, by disposing of all the inner materials, cleaning the URP shells and rebuilding with new, quality materials to meet the original specifications, resulting in a fit-for-purpose roof.

Conclusions

John Holland employed a comprehensive procurement process, both in relation to the URPs and more generally, that was consistent with industry practice. However, this process was not sufficient to detect and prevent the presence of non-conforming and hazardous products.

The fibre cement sheet sample provided early in the project was tested for asbestos in late July 2016 and asbestos was not detected. This may be because Yuanda China sourced the fibre cement sheet sample directly from Headerboard, but later purchased fibre cement sheet for the project via agent, SDBT. However, the origin of the sample could not be conclusively ascertained.

Although Yuanda China specified that SDBT must purchase and supply Headerboard product, the audit team has not been able to determine whether SDBT used an alternative supplier, which was the source of the asbestos-containing fibre cement sheet. Alternatively, while Headerboard advertise as an asbestos-free manufacturer, there is a possibility that they have sourced or produced some products with asbestos intended for those markets that allow asbestos containing building materials.

Yuanda China's substitution of the specified non-asbestos fibre cement sheet with asbestos containing fibre cement sheets and plasterboard in URPs highlights a failure in Yuanda's procurement, manufacturing and contract management processes. The result of the unauthorised component substitution is that the URPs as supplied and installed do not comply with the façade specification.

The presence of ACM was a result of factors, including;

- the URPs being a non-standard product for the contractor Yuanda (Aus);
- the product was sourced through a complex supply chain, in an international market, with differing legislative requirements in relation to asbestos;
- awareness of the risk of inadvertent procurement of asbestos containing building materials within this supply chain appears to be low;
- all stakeholders relied on country-of-origin documentation without further testing in Australia;
- none of the organisations in the supply chain for the URPs had a system to require asbestos testing for components and materials that do or may contain fibrous materials; and
- the Department of Immigration and Border Protection (DIBP) does not test every batch of imported building material for the presence of asbestos.

This audit concludes that the response to the confirmation of asbestos was managed appropriately; however there were deficiencies in task planning and risk assessment processes to control dust exposure when creating the openings in the URPs. Contamination was confined to a specific area and fully decontaminated, as evidenced by extensive testing including 280 bulk, surface and air samples.

The industry processes used by John Holland for detecting and preventing the presence of non-conforming and hazardous products must be improved.

An appropriate remediation plan for removal of the remaining asbestos-containing components from the URPs is in place. Completion of the work in accordance with this plan is expected to prevent exposure to asbestos and to leave the URPs free of asbestos.

Lessons learnt

The community expects that new buildings are free of asbestos. Owners, designers and specifiers should identify materials that may contain asbestos and only specify products and suppliers where they are satisfied that asbestos-free materials will be supplied and test results to confirm these are available.

Despite this, there remains a risk that asbestos can be incorrectly included in materials supplied to the Australian market.

Builders, sub-contractors and workers should require and use appropriate and effective dust control processes when cutting materials that will produce fine dust, or that have an asbestos contamination risk.

Industry and government must improve processes for detecting and preventing the presence of non-conforming and hazardous products in buildings. While the Building Minister's Forum, and government – industry bodies are addressing this problem, specifiers, builders and suppliers must ensure procurement processes are robust and include effective testing and verification.

References and further information

Referenced Acts and Regulations:

Government of Western Australia, *Building Act 2011*

Government of Western Australia, Building Regulations 2012

Government of Western Australia, *Builders' Registration Act 1939*

Government of Western Australia, *Building Services (Complaint Resolution and Administration) Act 2011*

Government of Western Australia, *Building Services (Registration) Act 2011*

These Acts can be downloaded from the State Law Publisher's website

Further information

Further information to reduce the risk of importing ACM is available from the Asbestos Safety and Eradication Agency at www.asbestossafety.gov.au.

Information on asbestos health risks is available from Enhealth in its guide *Asbestos: A Guide for Householders and the General Public*.

An Asbestos Importation Review Report is available from the Department of Immigration and Border Protection.

Appendix – Building control in WA

Legislative background

Under the *Building Act 2011*, all buildings require a building permit before construction commences. All non-single, residential buildings (class 2 to 9 buildings as defined by the NCC) require an occupancy permit before they are allowed to be occupied. Both of these permits require a registered building surveyor to provide a signed certificate of design compliance (in the case of a building permit) and a certificate of construction compliance (in the case of an occupancy permit). The certificates confirm that the building meets the applicable building standards.

The Building Act came in to effect on 2 April 2012. Construction of The PCH commenced in January 2012. Prior to the Building Act coming into effect, WA Government buildings were exempted from normal building control requirements:

Section 373 (4) in Part XV of the *Local Government Act 1960* (continued after 1995 as the *Local Government (Miscellaneous Provisions) Act 1960*):

> *(4) Notwithstanding that an Order is so made, the provisions of this Part shall not apply to buildings owned or occupied by, or under the control or management of the Crown in right of the State, or a department, agency, or instrumentality of the Crown in right of the State.*

Section 114 of the *Public Works Act 1902*:

> *114. No building, or other erection built or erected upon a railway or upon any land taken as or in connection with a Government work shall be subject to any Act, or any by-laws or regulations made under the same, except such as relate to public health, by which any local authority is empowered to regulate the erection, construction, or use of any buildings or erection within the boundaries of such local authority.*

These provisions were repealed by sections 153 and 170 of the *Building Act 2011*.

Transitional provisions

Regulations 41 and 43 of the Building Regulations 2012 provide that a building permit or occupancy permit is not required for building work for which a building licence was not required under the former provisions if—

(a) the on‑site building work had commenced before 2 April 2012; or
(b) a contract to carry out the building work was entered into before 2 April 2012.

Under these transitional provisions there was no requirement for the PCH to obtain a building permit and there is no requirement for an occupancy permit before the building is occupied and used.

Building approval certificate

The issuing of an occupancy permit relies on a certificate of construction compliance issued by a registered building surveyor. This certificate is inherently linked to the building's certificate of design compliance, in that it confirms that the building has been constructed to the approved design, as set out in the certificate of design compliance.

However, for various reasons, there may not be a certificate of design compliance issued for a building. In this case, the Building Act provides for the issue of a building approval certificate to confirm that the building is lawfully constructed and complies with the relevant building standards.

Section 52 of the Building Act provides that a person may apply for a building approval certificate for a building or an incidental structure that was constructed in accordance with

the written law applicable at the time of its construction; and on its completion, could be lawfully occupied or used without an occupancy permit.

An application for a building approval certificate under section 52 must include a certificate of building compliance from an independent building surveyor which states that:

a) occupying or using the building or incidental structure in its current state in the way proposed in the application would not adversely affect the safety and health of its occupants or other users; and

b) the building or incidental structure in its current state is otherwise suitable to be used in the way proposed in the application; and

c) the building or incidental structure complies with each authority under a written law that is prescribed for the purposes of this paragraph; and

d) the building or incidental structure substantially complies with each applicable building standard or other prescribed requirement in relation to the technical aspects of the construction of the building or structure.

However, obtaining a certificate of building compliance for a building of the scale and complexity of PCH would be prohibitive in terms of cost and time.