Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

Building Commission

FINAL REPORT

General Inspection Report Two: A general inspection into Yuanda-supplied products in the Western Australian building industry

August 2017

BUILDING COMMISSION GENERAL INSPECTION REPORT TWO (GIR2)

YUANDA-SUPPLIED PRODUCTS

A general inspection into the use of Yuanda products in Western Australian buildings

August 2017

Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

Contents

Glossary of terms, acronyms and abbreviations

Acronym	Full title
ACM	Asbestos containing materials
ACP	Aluminium composite panels
asbestos	A term used to describe a specific group of fibrous minerals including chrysotile (white asbestos), amosite (brown asbestos), and crocidolite (blue asbestos)
BCA	Building Code of Australia (volumes 1 and 2 of the National Construction Code)
BMF	Building Ministers' Forum (the group of Australian Commonwealth, State and Territory Ministers with responsibility for building and plumbing regulation)
curtain wall	A non-loadbearing exterior wall or facade fixed to the exterior of a building and enclosing it
DMIRS	Department of Mines, Industry Regulation and Safety
gasket	A shaped sheet or ring of rubber or other material used to seal the junction between two surfaces
JAS-ANZ	Joint Accreditation System of Australia and New Zealand
NATA	National Association of Testing Authorities
NCBP	Non-conforming building products
OccSafe	OccSafe Australia Pty Ltd
PCH	Perth Children's Hospital
SOG	Senior Officers' Group
WA	Western Australia
WorkSafe	WorkSafe (WA) a division of DMIRS
Yuanda (Aus)	Yuanda Australia Pty Ltd
Yuanda China	Shenyang Yuanda Aluminium Industry Engineering Co. Ltd
Yuanda Group	Yuanda (Aus) and Yuanda China as a commercial group

Figures, photographs and tables

1. Executive summary

This is the final report of the Building Commissioner's general inspection into building products that Yuanda Group has supplied and installed in Western Australia (WA).

In 2016 Yuanda (Aus) supplied and installed an asbestos-containing product in two Australian buildings: unitised roof panels containing an asbestos cement product at the Perth Children's Hospital (PCH) in WA, and a gasket containing asbestos at a building in Brisbane, Queensland.

The type of roof panel Yuanda Group supplied for the PCH was individually designed to address project-specific design and acoustic requirements. Similar panels were not supplied by Yuanda Group for any of the other 13 buildings identified in this report.

The gasket found to contain asbestos in Brisbane was a non-rubber sheet gasket wrapped around steel spigots to prevent noise and friction. Gaskets used in identified WA buildings are rubber and relate to curtain wall construction. The type of gasket used in the Brisbane building and found to contain asbestos has not been installed by Yuanda Group in WA buildings.

The PCH and 13 other buildings in WA were among 68 buildings confirmed nationally as containing Yuanda (Aus)-supplied products. These other buildings included publicly and privately owned buildings. For each building, Yuanda Group was the design and construct facade supplier and installer. Yuanda Group specialises in the assembly and installation of curtain walling, podium facades and glass/aluminium products.

Yuanda Group-supplied products were identified in each building and a list of products that were considered to be at possible risk of containing asbestos were sampled and tested for each building. Testing was undertaken at NATA-accredited testing facilities with no evidence of asbestos found in any of the tests carried out.

The main component of the curtain walling assemblies supplied and installed by Yuanda Group is safety glazing. In some instances the assembly was also found to include aluminium composite panels (ACPs). Both products are of interest to the Building Commission in relation to evidence of suitability for use.

The general inspection found that safety glazing incorporated into the Yuanda Group curtain walling assemblies demonstrated evidence of suitability through documentary evidence that confirmed compliance with the applicable building standards.

Varying quantities of ACPs supplied by Yuanda Group and forming part of the curtain walling assemblies were found in eight of the 13 buildings. The Building Commission is currently undertaking an audit into ACPs following the Grenfell Tower fire in London. The whole of state audit will assess whether cladding on high-risk buildings meets the requirements of the Building Code of Australia with building risk being based on the degree of risk to public safety. Three of the 13 listed buildings that have ACPs will be reviewed as part of the audit.

2. General inspection of Yuanda-supplied products in WA buildings

2.1. Scope

The purpose of this inspection program is to investigate the extent to which Yuanda Group-supplied and installed building materials in buildings within Western Australia (WA), and to assess whether those products comply with the applicable building standards.

The general inspection examined:

1. the number and type of buildings in WA that contain Yuanda Group products;
2. which Yuanda Group products have been used and the frequency with which those products have been used across the subject buildings;
3. what evidence Yuanda Group provided to demonstrate that the products are suitable for use; and
4. Yuanda Group processes to manufacture or procure products supplied to the WA building industry.

An audit into the products used in the construction of the new Perth Children's Hospital (PCH) is the subject of a separate report.

2.2. Background

In July 2016, asbestos was found in roof panels of the PCH and also in a gasket on a building site in Brisbane. Both of these products were supplied by Yuanda (Aus).

On Friday 15 July 2016, WA Building Commissioner Peter Gow announced that the Building Commission would carry out an independent general inspection of the use of Yuanda Group products in the WA construction industry using powers under the *Building Services (Complaint Resolution and Administration) Act 2011* (CRA).

Yuanda (Aus) supplied products to 13 WA buildings (see Table 1).

Table 1: Western Australian buildings inspected for Yuanda-supplied products

Building location	Building name	Main building use
Perth CBD	Brookfield Tower 1	Office
Perth CBD	Brookfield Tower 2	Office
Perth CBD	226 Adelaide Terrace	Office
Perth CBD	King Square 1	Office
Perth CBD	Raine Square Tower	Office
Perth CBD	Westralia Plaza	Office
Perth CBD	Capital Square	Office
Perth CBD	Alluvion	Office
Burswood	Crown Towers Perth	Hotel
Murdoch	Fiona Stanley Hospital – main building	Health care building
Murdoch	Fiona Stanley Hospital – administration building	Office
Murdoch	Fiona Stanley Hospital – rehabilitation building	Health care building
Burswood	Perth Stadium	Assembly building

2.3. Methodology

The Building Commission established a team to undertake a general inspection of the use of Yuanda Group products in the WA construction industry.

The inspection was conducted from July 2016 to April 2017. The inspection methodology involved reviewing and analysing documentation, conducting site inspections and interviewing stakeholders.

Affected building owners were provided details about the general inspection as well as Building Commission contact details for any queries they had.

2.3.1. Interviews with stakeholders

A preliminary meeting was initiated with Yuanda (Aus) to formally advise that a comprehensive general inspection would be undertaken and to advise of information required by the Building Commission. A further meeting was held with Yuanda (Aus) at the Building Commission's offices to discuss the status of the general inspection and the actions taken by Yuanda Group at that time. Regular ongoing communication with both Yuanda (Aus) and OccSafe Australia Pty Ltd (OccSafe) continued throughout the general inspection through email communication and phone calls.

The general inspection team conducted regular meetings with WorkSafe to exchange relevant information on progress related to asbestos testing.

The stakeholders interviewed included:

- OccSafe;
- Yuanda (Aus);
- WorkSafe;
- Brookfield-Multiplex; and
- local governments in their roles as permit authorities.

2.3.2. Liaison with government agencies

The general inspection team met with other government jurisdictions and agencies to ensure a comprehensive, whole-of-government response. The agencies consulted throughout the general inspection were:

- Department of Mines, Industry Regulation and Safety – WorkSafe;
- Department of Finance – Building Management and Works; and
- Department of Treasury – Strategic Projects and Asset Sales.

2.3.3. Review of documentation

The general inspection team was provided with access to a comprehensive range of documents from Yuanda Group, OccSafe and relevant permit authorities. The inspection team analysed all of this documentation in detail.

The types of documents that were reviewed during the general inspection included:

- plans;
- specifications;
- engineering details;
- building licences or permits;
- occupancy permits;
- design and construction certifications;
- inspection reports;
- laboratory test results (asbestos); and
- as built facade drawings.

The general inspection team reviewed the plans and specifications against the relevant provisions of the Building Code of Australia (BCA) and other laws. The key focus of analysis was asbestos investigation and product conformity. The general inspection team and WorkSafe reviewed all available test documents that pertained to the asbestos findings.

2.3.4. Site visits

The general inspection team inspected building exteriors to verify that the installation of facades was consistent with the as built/as supplied documentation provided by Yuanda (Aus).

2.3.5. Role of OccSafe

OccSafe is a safety consultancy company that performs asbestos identification, asbestos management, asbestos removal project management services, asbestos removal, assessor and supervisor training, as well as other safety-related consultancy services.

Yuanda Group engaged OccSafe to implement an asbestos testing program for all Yuanda Group product supplied buildings. This program commenced in July 2016 and related to 68 buildings across the country.

OccSafe engaged national building inspection franchisor Jim's Building Inspections as subcontractors for the works. OccSafe's reasoning for that selection was:

- consistency of sampling, testing and reporting;
- all operators had the appropriate qualifications;
- OccSafe had previously written the reporting and procedural templates along with franchisee experience and qualification requirements for this franchise;
- established sampling arrangements were in place with laboratories due to the franchise operators being a large group; and
- a national approach was required to test 68 buildings across Australia and the franchise was able to meet this volume of work.

3. National context

Non-conforming building products (NCBPs), whether domestically manufactured or imported, are an important and complex challenge of national significance, affecting the construction, manufacturing, trade (imports) and retail sectors. NCBPs 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.

A communiqué of the Building Ministers' Forum (BMF) on 31 July 2015 recognised concerns about health and safety risks posed by NCBPs, and Ministers agreed to establish the Senior Officers' Group (SOG). The SOG's role is to minimise the risk of building products failing to conform to relevant laws and regulations, including at the point of import. The SOG is comprised of senior building regulatory officers from the Commonwealth, states and territories.

The SOG formed the view that the extent of NCBPs in Australia is largely unknown. There are also limited powers to address NCBP imports within the current building regulatory system, which focuses on the end of the supply chain. The SOG identified a range of strategies to address these issues and, following wide consultation, on 19 February 2016 the BMF endorsed the SOG's *Strategies to address risks related to non-conforming building products* (SOG Roadmap). The full report can be found at www.hpw.qld.gov.au/SiteCollectionDocuments/NonConformingBuildingProductsReport.pdf.

The strategies in the SOG Roadmap aim to improve government responses to instances of NCBPs, enhance industry and consumer awareness, and encourage greater responsibility in the safe use of building products. The strategies include:

- review state and territory regulation to enhance regulator powers in responding to NCBPs;
- create a national forum of building regulators;
- improve collaboration between consumer law and building regulators;
- education strategies;
- consider establishment of a one-stop-shop national website;
- states and territories to provide evidence to the Commonwealth when they prohibit a NCBP;
- Commonwealth, state and territory regulators to share information on NCBPs;
- review of BCA-referenced Australian Standards related to high-risk building products, to assess 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.

The SOG Roadmap identifies actions required to deliver the strategies, the jurisdiction responsible for each strategy, and key indicators of success.

All jurisdictions are working to deliver the strategies outlined in the SOG Roadmap, including across the regulatory areas of building, consumer law and border protection (importation). After asbestos was found on two building sites in Perth and Brisbane, the SOG shared information and strategies that contributed to a rapid national response to this matter.

4. About Yuanda

4.1. General

Yuanda (Aus) is a design and construct facade subcontractor. Yuanda Group specialises in the assembly and installation of curtain walling systems and has provided and installed these assemblies in significant privately-owned and state-owned buildings across Australia. Since 2007 Yuanda Group has supplied and installed building products to 68 buildings, 14 of which are in WA.

Yuanda Group's core business is the supply and installation of curtain walling, podium facades and glass/aluminium products. Yuanda Group contracts directly to a project's registered builder and does not enter into second-tier contracts. It provides detailed design, manufacture and installation services.

Yuanda Group sets up factories focused on exports to single markets. The subject curtain walling systems are manufactured in Yuanda China's Australian products factory in mainland China. The curtain walling assemblies are then shipped to Australia and received by Yuanda (Aus). A small amount of the steel (non-base build structural steel) was sourced from Thailand. The Yuanda Group product procurement method is addressed in more detail in section 7 of this report.

Yuanda Group products are not sold through retailers in Australia but as part of a design and construct facade assembly. Yuanda (Aus) advised that Yuanda Group products are not available for sale to the domestic construction industry in WA.

The process to obtain Yuanda Group products for a building facade in WA is:

1. Project facade consultant designs a façade as part of design documentation.
2. Tendering builder provides documentation to Yuanda Group as its preferred facade provider.
3. Both Yuanda (Aus) and Yuanda China review and price the design.
4. If the tender is successful Yuanda Group provides shop detailing and certifications which are reviewed by the project facade consultant and architect.
5. When detailing is approved, Yuanda China manufactures a mock-up of the facade in its China factory which is inspected by the facade consultant and architect.
6. Final documentation and certification is provided and the product is manufactured and shipped to Fremantle Port.
7. Yuanda (Aus) subcontracts the installation of its curtain wall and related products to specialist curtain wall installation teams while maintaining control of the facade project.

This process involves testing and certification to Australian Standards. Initially only some samples were tested with the whole production run being certified on the basis of that sample testing. Since the finding of asbestos at the PCH each individual batch is now tested. Previously each individual batch was not tested. Some batches have been certified as being the same as the tested item. Where Yuanda China does not manufacture a part of the curtain walling system, the product is sourced from specialist suppliers.

Yuanda (Aus) advised that its earliest Australian projects commenced in 2007 and it now has a 60-70% market share of the high-end facade market in Australia.

Yuanda China was established in 1993 in Shenyang, China and manufactures building facade systems. Yuanda China was publically-listed in 2011 and currently is among the largest curtain wall manufacturing companies in China. Yuanda China has a 1.1km^2 manufacturing centre in Shenyang with three additional manufacturing bases located in Shanghai, Chengdu and Foshan. Yuanda Group has international branches in more than 30 countries across Europe, Asia, North America and Oceania.

4.2. Yuanda (Aus) response to the discovery of asbestos

Yuanda (Aus) engaged work health and safety consultants, OccSafe, to conduct a program of testing all Yuanda Group products installed in Australian buildings, both under construction and completed. Yuanda (Aus) advised that this program would involve testing products in 68 buildings, of which 14 were located in WA. This includes the 13 buildings that are the subject of this report and the PCH.

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

Yuanda (Aus) has provided WorkSafe and the Building Commission with documentation to show the number, type and results of the testing performed for the WA buildings.

5. The Building Commissioner's auditing powers

5.1. Building Services (Complaint Resolution and Administration) Act

The CRA enables the Building Commissioner to inspect any building or building service that has been or is being carried out to ascertain how building services have been carried out and how building standards have been applied (CRA s.65).

The Building Commissioner may publish a statement identifying any building services carried out in an unsatisfactory or dangerous manner (CRA s.88).

5.2. General inspection team

To carry out the general inspection the Building Commission established a team consisting of:

- a building surveyor;
- a principal scientific officer (WorkSafe); and
- support staff.

The building surveyor holds a Level 1 (unrestricted) building surveying practitioner registration and has relevant experience in the assessment and approval of class 2 to 9 (commercial and industrial) buildings.

The general inspection was overseen by both the audit manager and director of the Building Commission's Compliance Directorate.

6. Relevant laws

The 13 buildings inspected do not all fall under the same building law requirements. The applicable building law depends on:

- the date building works were commenced;
- the date building works were completed; and
- if the building was state-owned before the commencement of the *Building Act 2011* (Building Act) on 2 April 2012.

The following legislative requirements apply to the buildings included in the general inspection.

6.1. Building works completed before 2 April 2012 (non-state owned)

Four of the buildings investigated in this report were completed before 2 April 2012 (see Table 2).

Before 2 April 2012, the *Local Government (Miscellaneous Provisions) Act 1960* and its subsidiary legislation referenced the BCA as the relevant building standard. A transitional clause allowed building designs to comply with the requirements of the BCA in force 12 months before the building licence application.

The Local Government (Miscellaneous Provisions) Act required that the relevant local government issue:

- a **building licence** before works commenced; and
- a **certificate of classification** before a person could occupy a completed class 2 to 9 building.

The certificate of classification confirmed the building classification at the completion of works. Local government building surveyors inspected the completed works and requested relevant project installation certificates before issuing a certificate of classification, however this certificate does not confirm compliance with the BCA.

Table 2: Buildings commenced and completed before 2 April 2012

Building address	First building licence issued	Certificate of classification issued	Local government
226 Adelaide Terrace, Perth	February 2008	July 2011	City of Perth
300 Murray Street, Perth (Raine Square Tower)	July 2010	October 2011	City of Perth
167 St Georges Terrace, Perth (Westralia Plaza)	November 2007	April 2010	City of Perth
54-58 Mounts Bay Road, Perth (Alluvion)	July 2007	April 2010	City of Perth

6.2. Building works commenced before 2 April 2012 and completed after that date (non-state owned)

One of the buildings investigated in this report commenced before 2 April 2012 and was completed after this date (see Table 3).

The Building Act and its subsidiary legislation commenced on 2 April 2012. This legislation references the BCA as the relevant building standard. Building designs must comply with the requirements of either the current edition of the BCA, or the edition in force 12 months before the building permit application (s.31A(2)).

The building licence requirements for buildings commencing before 2 April 2012 were the same as described in section 6.1. From 2 April 2012, the building licence that was in effect is taken to be a building permit (*Building Act 2011* s.178(2)).

Class 2 to 9 buildings completed after 2 April 2012 are required to obtain an occupancy permit. For buildings commenced before 2 April 2012, that occupancy permit application must be accompanied by a certificate of building compliance (*Building Act 2011* s.54(3)).

The certificate of building compliance must be issued by an appropriately registered building surveyor, who makes the following declaration:

i. This building substantially complies with the building licence that was granted in respect of the construction of the building; or
ii. This building substantially complies with each applicable building standard in relation to the technical aspects of the construction of the building.

Table 3: Buildings commenced but not completed before 2 April 2012

Building address	**First building licence issued**	**Occupancy permit**	**Permit authority**
125-137 St Georges Terrace, Perth (Brookfield Tower 1)	May 2008	May 2012	City of Perth

6.3. Building works commenced after 2 April 2012

Five of the buildings investigated in this report commenced after 2 April 2012 (see Table 4).

For all construction commencing after 2 April 2012 the Building Act requires that the relevant permit authority issue:

- a **building permit** before works commence; and
- an **occupancy permit** before a person occupies a completed class 2 to 9 building.

A building permit application must include a certificate of design compliance issued by a registered building surveying contractor. In certifying design compliance the building surveyor confirms that the building design complies with the applicable building standards.

An occupancy permit application must include a certificate of construction compliance issued by a registered building surveyor contractor. In certifying construction compliance the building surveyor confirms that the building is constructed in accordance with the certificate of design compliance and that the building is suitable to be used in the manner proposed.

The Crown is bound by the Building Act and is required to obtain the relevant permits for state-owned buildings.

Table 4: Buildings commenced after 2 April 2012

Building address	First building permit issued	Occupancy permit	Permit authority
125-137 St Georges Terrace, Perth (Brookfield Tower 2)	November 2013	September 2015	City of Perth
560 Wellington Street, Perth (King Square 1)	December 2013	October 2015	City of Perth
98 Mounts Bay Road, Perth	May 2015	Building still under construction	City of Perth
201 Bolton Avenue, Burswood	August 2014	September 2016	Town of Victoria Park
Perth Stadium, Victoria Park Drive, Burswood	December 2014	Building still under construction	Department of Finance – Building Management and Works

6.4. State-owned buildings commenced before 2 April 2012

Three of the buildings investigated in this report are state-owned buildings that commenced before 2 April 2012 (see Table 5).

State-owned buildings that commenced before 2 April 2012 were not required to obtain a building licence or a certificate of classification. The Local Government (Miscellaneous Provisions) Act exempted "a building owned, or occupied by, or under the control or management of, the Crown in right of the State".

The Building Act and subsidiary legislation exempts state-owned buildings from occupancy permit requirements if they commenced before 2 April 2012 and a building licence was not required.

Table 5: State-owned buildings commenced before 2 April 2012

Building address
Fiona Stanley Hospital – Main Building (Building B). Robin Warren Drive, Murdoch
Fiona Stanley Hospital – Administration Building (Building E). Robin Warren Drive, Murdoch
Fiona Stanley Hospital – Rehabilitation Building (Building R). Robin Warren Drive, Murdoch

6.5. Evidence of suitability

The Building Act and its subsidiary legislation reference the BCA as the relevant building standard. The BCA is a nationally-adopted code, which contains evidence-of-suitability requirements for all building materials and forms of construction. A building material's suitability is to be demonstrated by one or more of the following:

i. A report from a registered testing authority, showing how the material or form of construction has been tested, the results of those tests, and any other relevant information that demonstrates its suitability for use in the building.
ii. A current Certificate of Conformity (for electrical and electronic equipment) or a current Certificate of Accreditation (the CodeMark Certification Scheme).

iii. A certificate from a professional engineer or other appropriately qualified person which –
   (A) certifies that a material, design, or form of construction complies with the requirements of the BCA; and
   (B) sets out the basis on which it is given and the extent to which relevant specifications, rules, codes of practice or other publications have been relied upon.
iv. A current certificate issued by a product certification body accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).
v. Any other form of documentary evidence that describes the properties and performance of the material or form of construction and demonstrates its suitability for use in the building.

6.6. Asbestos legislation

6.6.1. Customs (Prohibited Imports) Regulations 1956

The Customs (Prohibited Imports) Regulations 1956 prohibits the importation of all forms of asbestos and goods containing asbestos into Australia.

6.6.2. Health (Asbestos) Regulations 1992

The Health (Asbestos) Regulations 1992, made under WA's *Health Act 1911*, declare asbestos to be a hazardous substance. It is an offence to use, store, cut, repair, remove, or dispose of any material containing asbestos without taking reasonable measures to prevent asbestos fibres entering the atmosphere. 'Reasonable measures' include:

1. using water to minimise airborne asbestos;
2. using only non-powered hand tools or power tools with attachments to collect asbestos fibres;
3. using only vacuum cleaning equipment designed to collect asbestos fibres;
4. not using a high pressure water jet, or compressed air;
5. ensuring that material containing asbestos is not broken or abraded; and
6. ensuring that waste containing asbestos is disposed of in accordance with the Environmental Protection (Controlled Waste) Regulations 2000.

6.6.3. Occupational Safety and Health Act 1984

The health and safety of employees and subcontractors who are not self-insured under the *Work Health and Safety Act 2011* (Cth) are covered by the *Occupational Safety and Health Act 1984* (OSH Act). The OSH Act requires employers to provide and maintain a safe working environment for their employees, contractors and members of the public.

The Occupational Safety and Health Regulations 1996 require that articles containing asbestos not be used at workplaces. Any asbestos found at a workplace must be managed in accordance with the Code of Practice for the Management and Control of Asbestos in Workplaces (2005). In addition, the WorkSafe Commissioner must be notified as soon as practicable where people at a workplace may have been exposed to asbestos.

7. Findings

7.1. General

The buildings reviewed during the general inspection include nine privately-owned buildings and four state government buildings. The privately-owned buildings – eight office buildings and one hotel – are all multi-storey buildings with a high content of glass in the curtain walling assemblies. The state government buildings are three of the Fiona Stanley Hospital buildings and the new Perth Stadium. The Perth Stadium and one of the office buildings are still under construction; the other 11 buildings are completed and fully or partially occupied (see Table 6).

Table 6: Details of the 13 buildings investigated

Building	Builder	Building permit	Occupancy permit	Permit authority	Number of storeys
Alluvion 54-58 Mounts Bay Road, Perth	Broad Construction	July 2007	April 2010	City of Perth	14
Westralia Plaza 167 St Georges Terrace, Perth	Doric	November 2007	April 2010	City of Perth	12
266 Adelaide Terrace, Perth	ProBuild (started by Salta Constructions)	February 2008	July 2011	City of Perth	9
Brookfield Place – Tower 1 125-137 St Georges Terrace, Perth	Brookfield Multiplex	May 2008	May 2012	City of Perth	46
Raine Square Tower 300 Murray Street, Perth	ProBuild (started by Salta Constructions)	July 2010	October 2011	City of Perth	24
Brookfield Place – Tower 2 125-137 St Georges Terrace, Perth	Brookfield Multiplex	November 2013	September 2016	City of Perth	16
Kings Square 1 560 Wellington Street, Perth	John Holland	December 2013	October 2015	City of Perth	19
Crown Towers 201 Bolton Avenue, Burswood	Brookfield Multiplex	August 2014	September 2016	Town of Victoria Park	27
Capital Square 98 Mounts Bay Road, Perth	Brookfield Multiplex	May 2015	Building under construction	City of Perth	32
Perth Stadium Victoria Park Drive, Burswood	Brookfield Multiplex	December 2015	Building under construction	Department of Finance – Building Management and Works	5
Fiona Stanley Hospital – Main Building (Building B) Robin Warren Drive, Murdoch	Brookfield Multiplex	N/A	N/A	N/A	8
Fiona Stanley Hospital – Administration (Building E) Robin Warren Drive, Murdoch	Brookfield Multiplex	N/A	N/A	N/A	3
Fiona Stanley Hospital – Rehabilitation (Building R) Robin Warren Drive, Murdoch	Brookfield Multiplex	N/A	N/A	N/A	3

The BCA fire resistance requirements vary according a building's type, which is determined by the building's height and use. Type A construction is the highest fire resistance category. All of the 13 buildings inspected are required to be Type A construction.

7.2. Yuanda products

The products supplied and installed by Yuanda (Aus) are divided into three categories:

1. Products at risk of containing asbestos, as identified by OccSafe.
2. Products of interest in relation to compliance or conformance.

3. Products with no risk of having asbestos content and not of interest in relation to compliance or conformance.

7.2.1. Products at risk of containing asbestos

For each of the 13 buildings OccSafe, in consultation with Yuanda (Aus), reviewed the products and identified those Yuanda Group products at risk of containing asbestos. Products identified as being at possible risk of containing asbestos and used in the buildings inspected are:

- thermal insulation;
- EPDM rubber (ethylene propylene diene monomer (M-class) rubber);
- plastic spacer/lining;
- single/double sided polyethylene tape;
- close-cell foam;
- polyamide thermal break;
- aluminium foil tape;
- polypropylene filament yarn – seal strip; and
- door hardware.

These products are installed in most of the subject buildings as part of the curtain walling systems supplied and installed by Yuanda Group.

OccSafe subcontractors took samples of selected building materials and submitted them for testing at either of two Perth-based NATA-accredited testing facilities. Testing commenced in July 2016 with additional independent testing undertaken by some building owners. The two testing facilities were Lifetree Environmental Pty Ltd and Envirolab Services WA Pty Ltd.

Where buildings were under construction, the project builder provided site access to OccSafe. Where buildings were occupied, OccSafe arranged access and testing with the building owner or manager to minimise disturbance to the occupants.

OccSafe's testing process included:

- reviewing building plans and records to identify which products should be tested;
- identifying the products' locations throughout the buildings;
- working with builders or building managers to identify locations for drilling test samples to cause the least damage or disruption;
- safely obtaining and transporting samples to the laboratory;
- organising the laboratory testing of samples; and
- advising the building owners and managers of test results.

OccSafe produced a report, including testing certificates, for each building. All reports and certificates were reviewed by WorkSafe to ensure correct procedures were followed to manage asbestos risk.

The tests found no evidence of asbestos in any product. This is consistent with testing results in other states to date.

OccSafe also tested all Yuanda Group-supplied products at risk of containing asbestos in the PCH. Principal contractor John Holland did not provide access for OccSafe to test products on site. Instead a damaged curtain wall panel from the PCH was transferred to Yuanda Group's holding yard in the WA suburb of Wattleup. Samples from 15 products in this curtain wall assembly were tested at Lifetree Environmental Pty Ltd. These tests found no evidence of asbestos.

7.2.2. Products of interest in relation to compliance or conformance

The Building Commission considers that the following Yuanda Group-supplied products are of interest in relation to compliance or conformance.

1. glazing;
2. aluminium composite panels (ACPs); and
3. structural steel.

A building material's suitability can be demonstrated by a number of means (see Section 6.5 – Evidence of suitability). As each building is different, a case-by-case review of supplied documentation may be necessary for each application. The responsibility lies with the building surveyor to be satisfied that product or system documentation provided demonstrates compliance with the evidence of suitability requirements and the relevant performance requirements of the BCA.

The builder is responsible for ensuring that the building, when completed, complies with the approved plans and specifications, with the building surveyor certifying this to be so at the completion of works.

7.2.2.1. Glazing

Yuanda Group supplied glazing as the main component of their curtain walling system for all of the 13 subject buildings. The following types of safety glazing have been supplied and installed:

- insulating glass;
- frit glass;
- laminated insulating glass; and
- laminated glass.

The glazing was sourced from five different manufacturers:

1. China Southern Glass Holding Co. Ltd;
2. Shanghai Yaohua Glass Co. Ltd China;
3. Xinyi Glass (Tianjin) Co. Ltd;
4. Viracon, USA; and
5. AVIC Sanxin Co. Ltd.

<u>China Southern Glass Holding Co. Ltd</u>

This company provides safety glazing for buildings and has StandardsMark certification for its glazing (see Appendix A – StandardsMark) and was originally certified in 1991. The current licence is due for renewal later this year. This company provided glazing that Yuanda Group assembled and installed in 10 of the 13 subject buildings (StandardsMark Certificate SMK1089).

<u>Shanghai Yaohua Glass Co. Ltd China</u>

This company holds a StandardsMark licence for safety glazing in buildings and provided glazing that Yuanda Group assembled and installed on one of the 13 subject buildings. The earliest certification found for this company is 2006 (StandardsMark Certificates SMKB20542 and SMK40107).

<u>Xinyi Glass (Tianjin) Co. Ltd</u>

This company also holds a StandardsMark licence for the manufacture of safety glazing in buildings and its subsidiary (Xinyi Glass Engineering) obtained StandardsMark licences in 2015 and 2014 respectively. The company provided glazing that Yuanda Group assembled

and installed in two of the 13 subject buildings (StandardsMark Certificates SMKB20265 and SMK40379).

AVIC Sanxin Co. Ltd

This company holds accreditation for safety glass compliance with AS/NZS 2208:1996 through Certification Solutions International, an Australian certification body, and provided glazing assembled and installed by Yuanda Group on two of the 13 subject buildings.

Viracon Inc

This United States of America (USA) company has safety glazing product certification through a USA certification scheme called SGCC (Safety Glazing Certification Council). The scheme is recognised by the American National Standards Institute. This company provided glazing assembled and installed by Yuanda Group on one of the 13 subject buildings.

7.2.2.2. Yuanda-supplied aluminium composite panels

Yuanda Group supplied ACPs for eight of the subject buildings in varying quantities depending on building facade design. Yuanda sourced the ACPs from two specialist suppliers:

1. Haida Jiangyin Litai Ornamental Materials Co. Ltd – **Haida Brand ACP**
2. Mitsubishi Chemical Functional Products Inc – **Alpolic**

ACPs examined as part of this audit were installed externally and formed either part of the curtain walling or were an attachment to the exterior of the building.

Fire-rated Alpolic ACPs are installed on four of the subject buildings. Alpolic ACPs are produced in Japan, Germany and the USA. Alpolic FR is certified as a non-combustible material in Japan (according to that country's testing regime) and achieves high fire ratings under European and USA testing standards. A technical data sheet is available that provides a summary of fire tests. Documentation reviewed showed the product used in the four buildings to be Alpolic FR and additionally provided technical data showing a summary of fire tests undertaken.

Haida Brand ACPs are installed in four of the subject buildings and are manufactured in China. Documentation reviewed shows the Haida Brand fire rated product as having been the product used in the curtain walling assemblies on the four buildings. The Haida Brand product used is the same product used on the PCH. In that instance, after investigation and based on an independent fire engineer review, the Building Commission was satisfied that the product met the performance requirements of the BCA.

Three of the 13 listed buildings that have ACPs will be reviewed in the state-wide audit of ACPs following the Grenfell Tower fire. The three buildings are to be included in the state-wide audit based on their usage and height as per the scope of that audit.

7.2.2.3. Steel

Yuanda Group supplied steel products as part of their curtain walling systems on all of the 13 subject buildings. The supply of steel by Yuanda Group has been limited to the following products:

- galvanized sheet;
- cast-in channel;
- t-bolts; and
- cast-in and hollow plates.

These products are not part of the base-build structural steel.

7.2.3. Products not at risk of containing asbestos or being of interest in relation to compliance or conformance

Yuanda Group supplied other building materials that are not considered to be at risk of containing asbestos or being non-conforming. These products are prevalent through all of the subject buildings as part of the supplied and installed curtain walling systems. These products include:

- extruded aluminium;
- stainless steel fixings; and
- stainless steel bird mesh.

7.3. Yuanda product procurement and manufacture

Yuanda (Aus) largely procures products from Yuanda China and is not involved in the manufacturing process. Yuanda China manufactures unitised and stick curtain walls, using products discussed in the preceding parts of this section of the report. The Yuanda China facility sources base products and manufactures facade assemblies for export.

Yuanda China goes through a multi-layered procurement planning, inspection and acceptance process. Yuanda Group advises that the manufacture of its curtain walling incorporates a stringent quality control process, including procedures for:

- purchase control;
- materials inspection;
- production control; and
- control of unqualified products.

Where Yuanda (Aus) procures products from sources other than Yuanda China there is a separate procurement policy. The Yuanda (Aus) procurement process focuses on budget and accuracy of quotation. The process also requires details from the product supplier including testing and commissioning.

Figure 1: Yuanda China product assembly (typical)

7.4. Yuanda actions during the general inspection

After being notified that asbestos was found in two of their products, Yuanda (Aus) initiated a national asbestos testing program. Yuanda (Aus) engaged independent experts OccSafe to carry out sampling and testing in 68 buildings across Australia. OccSafe oversaw and appointed its own expert consultants to manage the testing process, including identifying materials for testing, taking samples and organising laboratory testing. Appropriately qualified individuals collected samples that were then tested by NATA-accredited laboratories.

During this inspection, Yuanda (Aus) provided documentation to the Building Commission as requested. It also circulated regular stakeholder bulletins containing details of the number of buildings tested, samples taken and results. Yuanda Group circulated these bulletins nationally to affected building owners and government agencies.

During this time the Australian Border Force requested that NATA testing be conducted on 37 Yuanda Group shipping containers and two air freight shipments nationally.

In September 2016 the Building Commission released an interim report on the PCH asbestos. The report was critical of Yuanda China's procurement process and added weight to the requirement for Yuanda Group to carry out an internal examination of their processes. Yuanda Group agreed to improve their procurement procedures in China.

As part of its commitment to improving its procurement process, senior Yuanda (Aus) managers visited the Yuanda China factory to discuss the recent events and have advised that they were successful in raising concerns to China regarding the procurement and product management processes and procedures.

Yuanda Group continued to engage with the Building Commission and other state and federal bodies. In late September 2016 Yuanda (Aus) implemented an asbestos sampling and testing process in China as part of implementing NATA-certified sampling in China and NATA-accredited testing in Australia.

In November 2016 Yuanda (Aus) announced to stakeholders that it had established a NATA-accredited testing facility in the Yuanda China factory. Building Commission officers questioned the validity of testing in another country and queried the validity of this claim with NATA. NATA confirmed that it had no NATA-accredited laboratories in China that work with construction materials.

Yuanda (Aus) was contacted by NATA and responded that the bulletin contained incorrect wording and that a new bulletin would be released correcting and clarifying the statement. NATA accepted the Yuanda (Aus) explanation of the incorrect claim, however it considered the matter to be of a serious nature and informed government stakeholders (including the Building Commission) of its concerns.

In December 2016 Yuanda Group issued a stakeholder bulletin clarifying their previous claim that a NATA-accredited factory was located in their China factory. Yuanda Group confirmed that it had arranged for NATA-accredited laboratory testing of all material used in Australian production under the following protocol:

- Independent licensed asbestos assessor OccSafe visited the factory and trained Yuanda China personnel to collect and transport product samples.
- Any material that could contain asbestos will be delivered to Yuanda China factory with the manufacturer's batch number identification.
- Trained personnel shall take samples of the material batch and courier them to a NATA-accredited laboratory in Brisbane for asbestos testing. Batch sample products are imported into Australia via an approved courier process using an Exception for Scientific Purposes Approval through OccSafe's Partner Laboratory COHLABS.
- Regular suppliers to Yuanda Group will be required to sample each batch during manufacture and provide a test certificate from an Australian NATA-accredited laboratory for each batch number.
- Yuanda China's quality control documentation will record which shipments contain each batch of material.
- Suppliers from countries that have not yet banned the export of asbestos will be required to provide Yuanda Group with a test certificate obtained from an Australian NATA-accredited laboratory for each batch number.

8. Conclusion

A comprehensive asbestos testing program confirmed that no asbestos was found in any of the Yuanda Group tested products in the 13 buildings subject to this inspection.

The use of Yuanda Group-supplied and installed products in the WA building industry are limited to high-end commercial buildings. The products involved are curtain walling assemblies and include all the components required to manufacture those assemblies including glass, ACPs, rubber gaskets and steel fixings.

Yuanda Group has reviewed its processes to ensure a more transparent and accountable demonstration of product conformance, in accordance with the BCA evidence-of-suitability requirements. It is the builder's and building surveyor's responsibility to ensure that conforming products are selected and used in a compliant manner. A building product may be non-compliant in one location or building type however it may meet conformance and compliance requirements in another location or building type. Builders and building surveyors should use professional caution when considering evidence of compliance for a product. While the BCA allows documentary evidence other than prescribed certification or testing, a thorough examination of any such testing or certification must be carried out and documented prior to acceptance.

9. References and further information

9.1.1. Referenced Acts and Regulations:

Government of Western Australia, *Building Act 2011*

Government of Western Australia, Building Regulations 1989 (ceased)

Government of Western Australia, Building Regulations 2012

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

Government of Western Australia, *Health Act 1911*

Government of Western Australia, Health (Asbestos) Regulations 1992

Government of Western Australia, *Local Government Miscellaneous Provisions Act 1960*

Government of Western Australia, *Occupational Safety and Health Act 1984*

Western Australian Acts can be downloaded from the State Law Publisher website at www.slp.wa.gov.au.

9.1.2. 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*, available on the Department of Health website at www.health.gov.au/internet/main/publishing.nsf/Content/ohp-enhealth-asbestos-may2012.htm.

An Asbestos Importation Review Report is available from the Department of Immigration and Border Protection at www.border.gov.au/ReportsandPublications/Documents/reviews-and-inquiries/asbestos-importation-review.pdf.

10. Appendix A – StandardsMark

StandardsMark is a licence issued by SAI Global after initial product testing and is followed by assessment, regular production batch testing and evaluation of the effectiveness of the manufacturing process in ensuring continuing product compliance.

The StandardsMark certification scheme includes:

- design verification;
- document review;
- quality plan implementation; and
- ongoing assessments.

StandardsMark is an accredited JAS-ANZ program. The licences for the companies mentioned in this report relate to the manufacture of safety glass and confirms compliance to *AS/NZS 2208.1996 – Safety glazing materials in buildings.*

For more information, download SAI Global's *Product compliance program – StandardsMark* brochure available on the SAI Global website at www.saiglobal.com/product-certification/downloads/PCP06.02StandardsMarkProductComplianceProgram.pdf.