

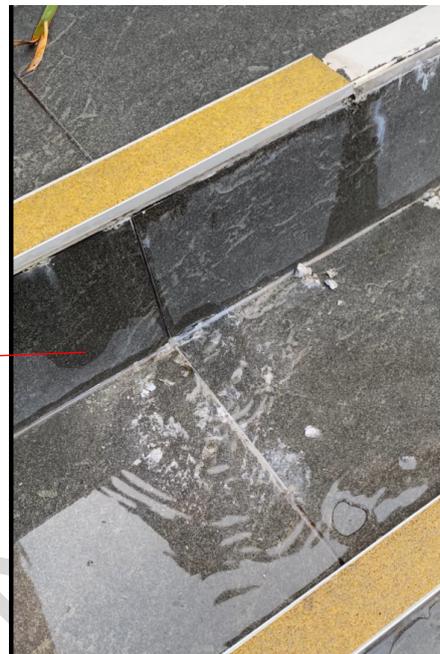
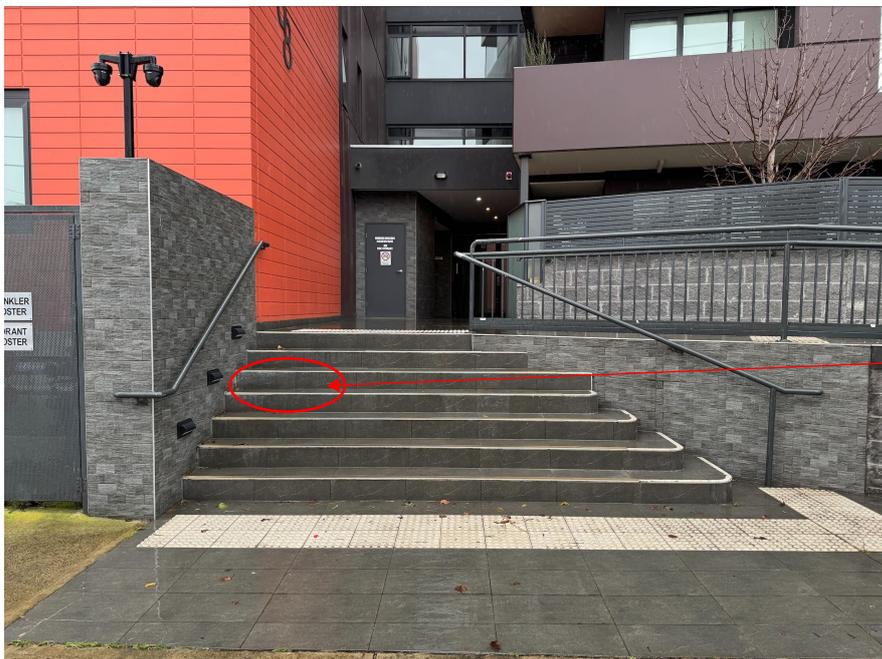
388-390 Murray rd Preston

Date 22/07/2025

Client - Access Strata

Job- Investigate video footage of water bubbling out of front steps.

Inspected by- John Lewis.



Attended site to investigate report and video of water bubbling out of the front steps to the building.

Access site and inspect steps.

No water visible seeping out of steps at the time.

Check for possible causes.

Check for fire service and potable water pipework. Nil in area.

Check for irrigation pipework. Nil.

Check for storm water and sewer pipework. None.

Spoke with tenant who reported the issue. Water was video taped bubbling out of step after cleaning efflorescence off of the steps.

Caulking at the base of the tiles on the lefthand side approximately halfway up the steps was disturbed and water flowed out from behind the tile kicker.

Heavy rain started when on site.

Water was observed seeping into cracks in the tile grout and gaps where the steps have subsided.

Also gaps where the feature stacked stone wall meets the red precast panel wall.

We believe that rain water enters the tile bed through cracks and gaps and builds up behind the tile kickers on the stair treads. When the caulking at the bottom of one of the steps was disturbed the built up water was able to escape.

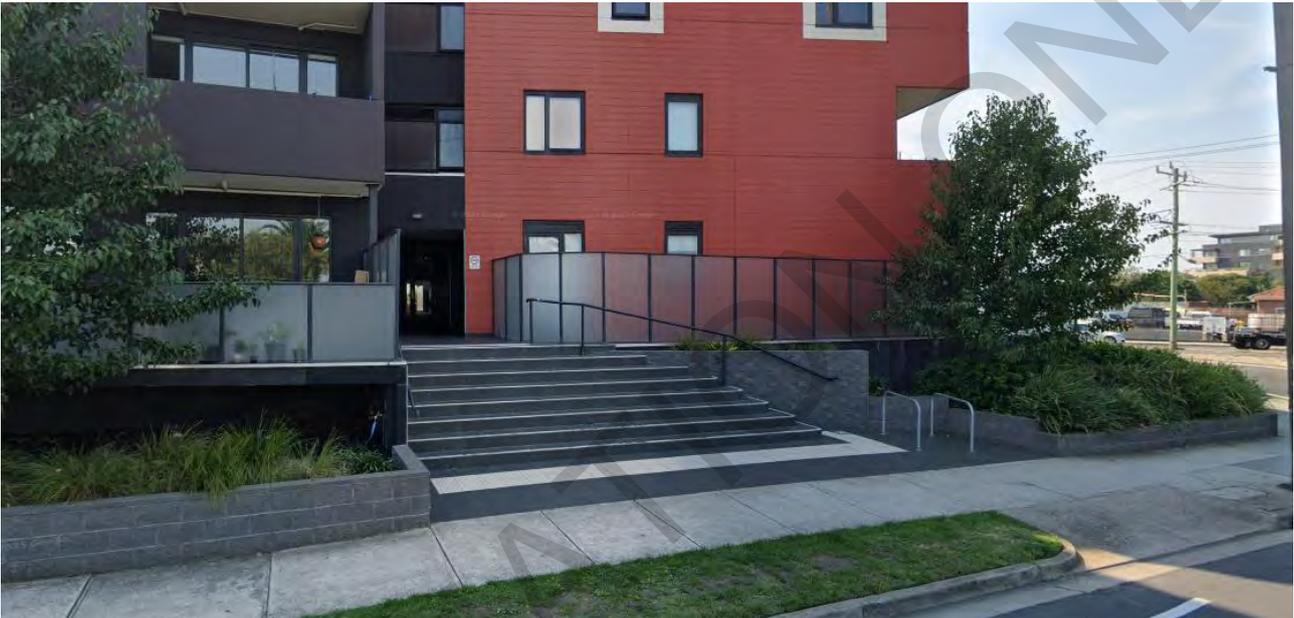
There are cracks and evidence of subsidence of the stairs.

We recommend a tiler inspect and provide comment on the installation and advice on appropriate repairs to prevent water lifting the tiles and creating slip hazards on the stairs.



**File Number:** 250854  
**Date:** 18 August 2025  
**Client:** Carringvale Pty Ltd  
17/105 Cochrans Road  
MOORABBIN VIC 3189  
**Distribution:** - Carringvale Pty Ltd

## RE: Site Investigation at 388 Murray Road, Preston



A site investigation was undertaken on 15 August 2025. The purpose of the investigation was to provide remedial recommendations for two external stairs.

### Scope of the Investigation

The site investigation included the drilling of six hand augered boreholes and exposure of the existing footing in one location.

The subsurface profile was logged and bulk sampled using visual-tactile methods in accordance with AS2870-2011. Borehole logs and locations are shown on pages 6 to 8 of this report.

### Site Description

The site is occupied by multi-level concrete apartment building with a basement. External stairs to the south and north have experienced significant settlement, separate to the building. The surrounding areas have a ground cover of pavements and well-established garden beds and scattered trees. The site has minimal fall poor natural surface drainage.





## **Subsurface Conditions**

### ***Regional geology***

The site is identified on the 'Geological Survey of Victoria' Melbourne and Suburbs Sheet (1:31,680) as being in the province of the Silurian "Dargile" formation and associated soils.



*Extract from 'Geological Survey of Victoria' Melbourne and Suburbs Sheet (1:31,680).*

### ***Subsurface profile***

See borehole logs pages 6 and 7.

The boreholes intersected:

- FILLING to depths of ranging from 0.40m to in excess of 1.70m, underlain by:
- Natural loose clayey SILT to depths of between 0.60m and 0.65m, underlain by:
- Stiff silty CLAY to a maximum borehole termination depth of 2.30m

The existing fill material can be considered the equivalent of rolled non sand fill in accordance with AS2870-2011 clause 6.4.2.

### ***Soil moisture & groundwater***

No groundwater was intersected in the boreholes. Boreholes 4, 5 and 6 intersected dry to moist filling, otherwise filling and natural soils intersected were in a moist condition.

### ***Site Classification***

The site is classified as **CLASS P** in accordance with AS2870-2011 due to the depth of fill, presence of trees and buildings resulting in increased risks of abnormal soil moisture conditions (Clause 1.3.3).

The subsurface profile is moderately reactive (CLASS M).

### ***Sub-Soil Classification***

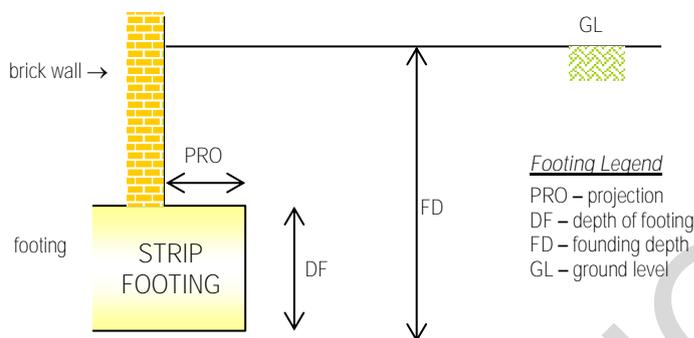
With reference to AS1170.4-2007, Section 2.4, a site sub-soil class of **CLASS C<sub>e</sub> – Shallow Soil Site** is appropriate.



### Details of Existing Footings

The existing northern stair footings were exposed at borehole 4 (see figure 1). Dimensions and founding material are shown below; depths are relative to the existing surface levels at the time of the investigation.

Location	Borehole 4
	Northern stair
Type	Concrete strip
Founding Depth	600mm
Depth of Footing	450mm
Projection	80-150mm (irregular)
Founding Material	FILL



### Discussion

The southern and northern stairs in question have experienced significant settlement. The adjacent superstructure the stairs abut appears to be performing well.

The structure comprises a multilevel concrete apartment building with a basement. The basement is offset from the boundaries and may have been constructed using a 'bottom up' method whereby the bulk excavation is conducted with battered edges and then backfilled following retaining wall construction.

It appears the stairs have been constructed on the uncontrolled backfill material which has subsequently settled over time possibly exacerbated by nearby vegetation and garden watering regime.

The existing filling is not a suitable founding material (as demonstrated by the existing stair performance) and the stairs will need to be reconstructed on new foundations. A further alternative for the smaller stairs to the north of the building could be a steel structure fully suspended from the existing building (at the discretion of the structural engineer).

Due to the depth of filling and potential of surcharging the existing basement walls, we recommend new foundations be fully suspended on piles.

### Screw or bored piles

As drill rig access was unavailable to the site at the time of the investigation, the boreholes were conducted to limited depths with hand augers. We advise the following recommendations to be considered preliminary until demolition and clearing are complete to allow for further investigation with machinery (drill rig).

Bored or screw piles should penetrate through any filling and natural clayey SILT and be founded a minimum of 1000mm within the natural stiff silty CLAY adopting a minimum founding depth of 3000mm.



Piles must be deepened and founded 500mm below the level of plane of inclination of 45° (for clay) above horizontal extending outwards from the base of the basement excavation (as illustrated by figure C6.1 AS 2870-2011).

Bored or screw piles can be proportioned for an allowable end bearing pressure of 300kPa; a skin friction component of 15kPa is available for bored piles below 1500mm depth.

The base of bored piles must be free from loose or fallen material.

Cased, Continuous Flight Auger (CFA) or screw pile methods may be required where excessive collapse of the fill or sand soils occurs and/or where perched groundwater is present at the time of construction.

Installation torques should be checked to verify screw pile loads.

## **Construction & Maintenance**

### ***Site conditions***

Excavation within fill material and natural silt soils may experience short-term instability (particularly if undertaken during the wetter months) and shoring and/or over excavation should be anticipated.

Disturbance of the filling and any natural soils may have resulted from previous site works and should be anticipated.

### ***Articulation***

Articulation of masonry walls should be provided as per details contained in reference (2) below. Spacing between articulation joints should not exceed a maximum of 6.0m, and should be provided at/or between:

- Any new walls abutting the existing residence (as per AS 2870-2011, clause 3.1.5);
- Different foundation types;
- Footings founding at significantly different founding depths, or founding material; and
- Points of high stress i.e. above door and window openings, changes in storey height, or above large spanning lintels.

### ***Service trenches & easements***

Where footings are located in close proximity or adjacent to a backfilled service trench or easements, the footing must be deepened and founded 500mm below the level of plane of inclination of 30° (for sand) and 45° (for clay) above horizontal extending outwards from the base of the trench or filling (as illustrated by figure C6.1 AS 2870-2011). This includes service trenches which may be present on adjacent sites or on site prior to the current development (such as abandoned stormwater and sewer trenches).

All service trenches should be sloped away from the building as per AS2870-2011 section 5.6.3(b, c and d) and be backfilled with non-permeable material as per AS2870-2011 section 5.6.3 (b). Backfill material should ideally comprise weak mix concrete, mortar or (preferably) cement stabilised soil, or clean adequately tamped/compacted clay placed marginally wet of optimum. Permeable or granular material such as sand, gravel, ¼ minus, or building rubble, should not be used to backfill service trenches in proximity to building foundations.

### ***Construction***

All contractors must be well **briefed** as to the requirements and specifications in this report. To minimise the likelihood of misinterpretation, this report must not be reproduced unless in full and contractors given ready access to the complete report.



This report is based on the assumptions that conditions revealed through selective sampling are indicative of the actual conditions throughout the site, i.e. correlation between boreholes. Variations between boreholes may exist due to previous land use or natural geologic processes. The subsurface profile can be discerned only during earthworks when the conditions can be directly observed; footings may need to be additionally deepened above the minimum indicated in this report.

For further information regarding geotechnical site investigation reports, refer to reference (4) below.

Inspection of all foundation excavations, site works and compaction must be conducted by a suitably qualified, experienced engineer, engineering geologist, building surveyor or similar to ensure that the founding material and site works are in accordance with this report. Should there be any doubt, this office should be immediately contacted.

Please do not hesitate to contact us, should there be any further queries.

Yours faithfully,

**Melbourne Geotechnics Pty Ltd**

#### **References**

1. AS2870-2011. "Residential slabs and footings."
2. Cement Concrete & Aggregates Australia. Technical Note: TN61. August 2008.
3. CSIRO Information Sheet BTF 18: "Foundation Maintenance and Footing Performance: A Homeowners Guide".
4. Institution of Engineers, Australia. 1987. "Guidelines for the Provision of Geotechnical Information in Construction Contracts".
5. AS1726-2017. "Geotechnical Site Investigations".
6. AS2159- 2009. "Piling – Design and Installation".

<b>Melbourne Geotechnics Pty Ltd</b> Consulting Geotechnical Engineers		<b>File:</b> 250854 <b>Date:</b> 15/08/25 <b>Supervisor:</b> HM WL
<b>Borehole Logs</b>		

**Client:** Carringvale Pty Ltd

**Project:** 388 Murray Road, Preston

<b>Borehole No.</b> 1		<b>Drilling Method:</b> HA	<b>Location:</b> see Figure 1		
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
	Fill	Silty SAND/clayey SILT/silty CLAY/rubble/gravel	L	M	
1.70			L-MD	M	
		Refusal at 1.70m depth within FILLING			

<b>Borehole No.</b> 2		<b>Drilling Method:</b> HA	<b>Location:</b> see Figure 1		
	Fill	Silty SAND/clayey SILT/silty CLAY/rubble/gravel	L	M	
1.50			L-MD	M	
		Refusal at 1.50m depth within FILLING			

<b>Borehole No.</b> 3		<b>Drilling Method:</b> HA	<b>Location:</b> see Figure 1		
0.40	Fill	Clayey SILT/gravel/roots	L	M	
0.65	SP	Clayey SILT (ML), low plasticity, brown grading to grey	L	M	
		Silty CLAY (CI), medium plasticity, orange/brown/grey, some sand	ST	M	
2.30		Borehole terminated at 2.30m depth			

<b>Legend:</b>	<b>Density</b> VL - Very Loose L - Loose MD - Medium Density D - Dense	<b>Cohesion</b> S - Soft F- Firm ST - Stiff VST- Very Stiff	<b>Moisture</b> W - Wet M - Moist D - Dry	<b>HA</b> - Hand Auger <b>A</b> - Flight Auger Drill Rig Unified Soil Classification Symbols: CL, SM, SW SP - Soil Profile Some < 15% Trace < 5%
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<b>Melbourne Geotechnics Pty Ltd</b> Consulting Geotechnical Engineers		<b>File:</b> 250854 <b>Date:</b> 15/08/25 <b>Supervisor:</b> HM WL
<b>Borehole Logs</b>		

**Client:** Carringvale Pty Ltd

**Project:** 388 Murray Road, Preston

<b>Borehole No.</b> 4		<b>Drilling Method:</b> HA	<b>Location:</b> see Figure 1		
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
0.90	Fill	Silty SAND/clayey SILT/silty CLAY/rubble/gravel	L	M	
		Refusal at 0.90m depth within FILLING			

<b>Borehole No.</b> 5		<b>Drilling Method:</b> HA	<b>Location:</b> see Figure 1		
0.30	Fill	Silty SAND/clayey SILT/silty CLAY/rubble/gravel	MD	D	
		Refusal at 0.30m depth within FILLING			

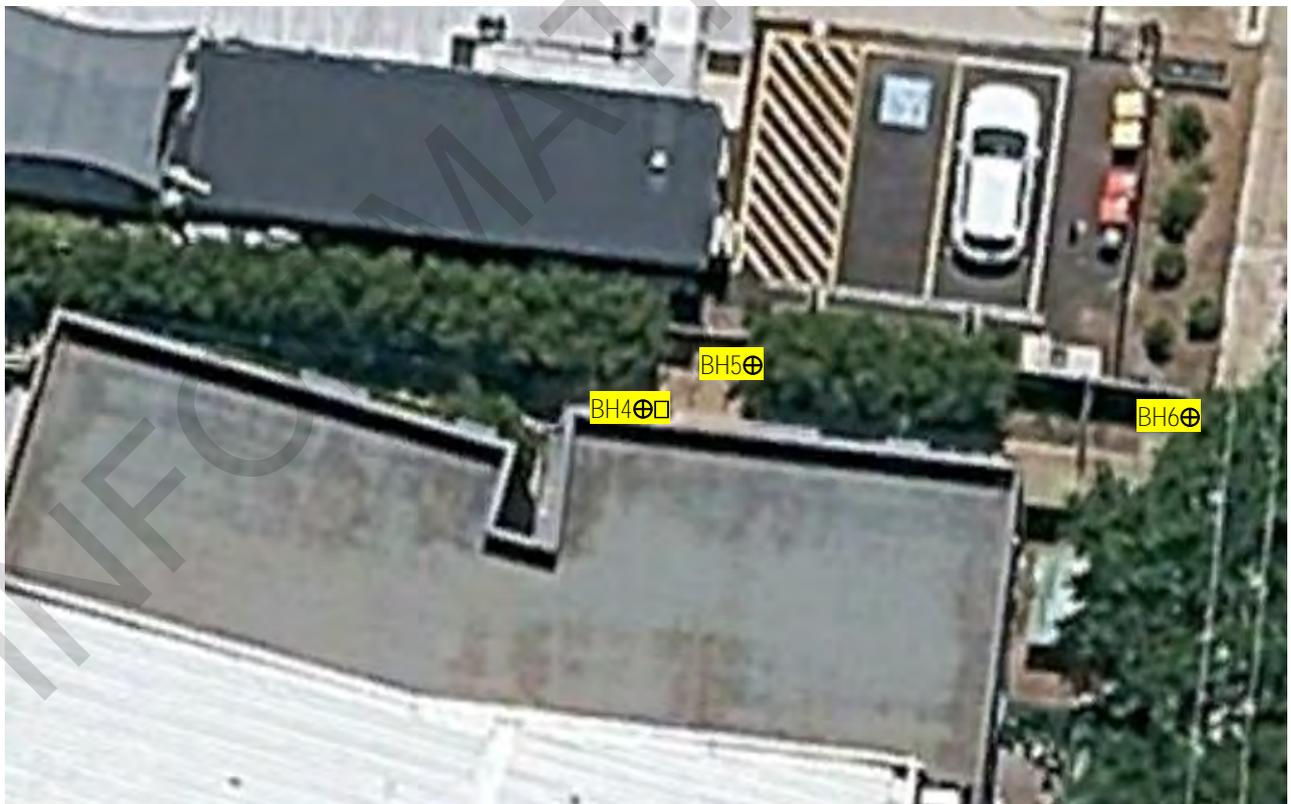
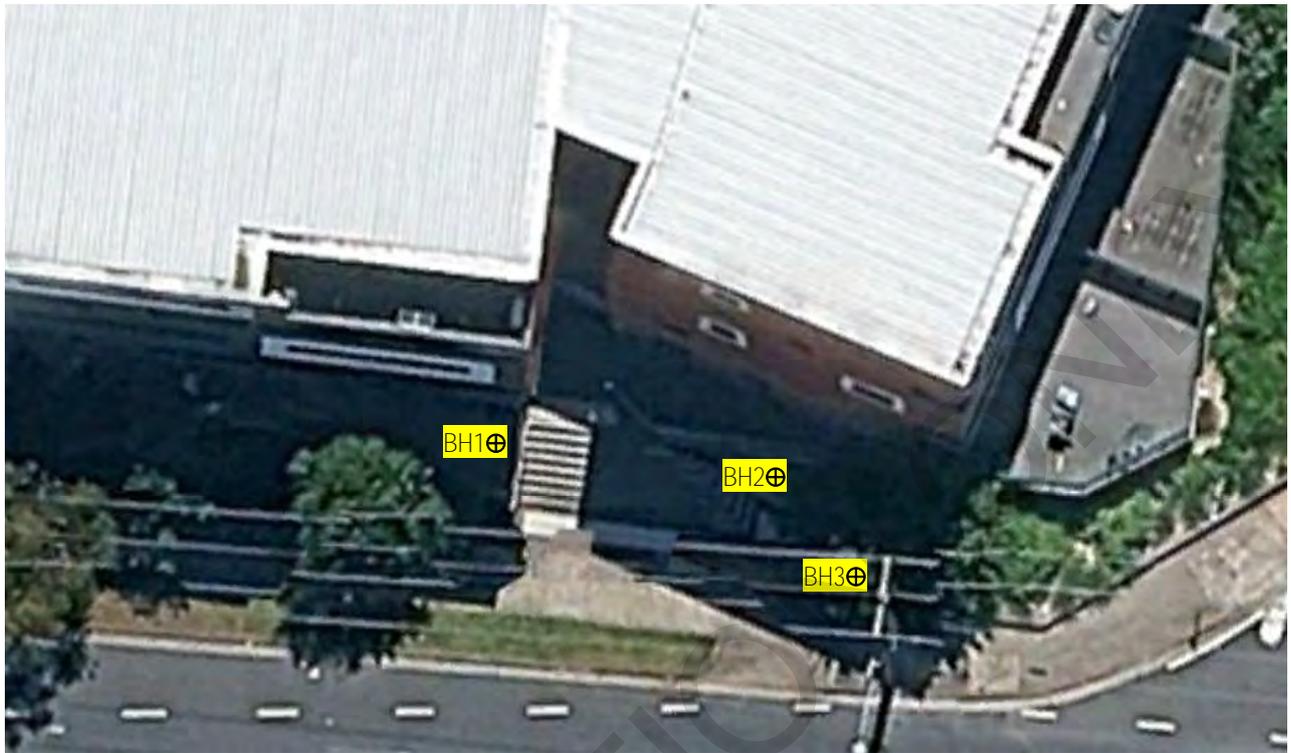
<b>Borehole No.</b> 6		<b>Drilling Method:</b> HA	<b>Location:</b> see Figure 1		
0.45	Fill	Clayey SILT/gravel/roots	L-MD	M-D	
0.60	SP	Clayey SILT (ML), low plasticity, brown grading to grey	L	M	
		Silty CLAY (CI), medium plasticity, orange/brown/grey, some sand	ST	M	
2.30		Borehole terminated at 2.30m depth			

**Legend:**

<b>Density</b>	<b>Cohesion</b>	<b>Moisture</b>	<b>HA</b> - Hand Auger <b>A</b> - Flight Auger Drill Rig
VL - Very Loose	S - Soft	W - Wet	Unified Soil Classification Symbols: CL, SM, SW
L - Loose	F- Firm	M - Moist	SP - Soil Profile
MD - Medium Density	ST - Stiff	D - Dry	Some < 15%
D - Dense	VST- Very Stiff		Trace < 5%

LOCATION PLAN

Figure 1



**Project:**  
388 Murray Road, Preston

**Scale:**  
Not to Scale (sketch for borehole locations)

**Legend:**  
⊕ Borehole  
⊕ □ Footing inspection

*Consulting Engineer*

*Re: 25050-01*

*Mobile*           0419 736577

*E-mail*           [engineerrightnow@gmail.com](mailto:engineerrightnow@gmail.com)

10 Lynden Grove  
Warrnambool VIC 3280

August 26, 2025

Carringvale Pty Ltd  
17/105 Cochranes Road  
MOORABBIN VIC 3189

**RE: Existing Apartment Building 388 Murray Road, Preston**

As requested, a visual inspection of the existing building at the above location was carried out on August 7<sup>th</sup>, 2025. The purpose of the inspection was to assess and comment on the concrete stairs at the front (South) and rear (North) entrances.

The existing structure is a multi-level apartment building with a basement. The ground level of building is approximately 1400mm above street level, with the basement being partly in ground and partly above ground.

External entry stairs and some built-up retained garden beds have been constructed on the South side of the building. External stairs have been built on the North side of the building. The stairs appear to be mass concrete, the retained garden beds have been constructed using concrete blocks supported on strip footings.

On the South side of the building, based on the cracks and gaps observed, it appears that the mass concrete steps and the block wall along its north and west edge have settled and “rolled forward” towards the south. This indicates that the steps and block walls are supported on the same footing system. The north edge wall appears to be unreinforced masonry. This wall has been backfilled with soil and also has a noticeable “outward” lean on it. These defects can be seen in photographs in Appendix A, with explanations given.

Soil test results for boreholes on the South side of the building BH1, BH2, BH3 in Melbourne Geotechnics Report 250854 indicate that the whilst the natural soil is Stiff Silty Clay, with 600-650mm of Clayey Silt soil and fill over top of it, the steps and block walls have been constructed on Loose Fill.

On the North side of the building, based on the cracks and gaps observed, it appears that the concrete steps, block walls, and footpaths have settled predominantly vertically downwards, with the paths having a slightly noticeable slope towards the basement wall. These defects can be seen in photographs in Appendix B, with explanations given.

Soil test results for boreholes on the North side of the building BH4, BH5, BH6 in Melbourne Geotechnics Report 250854 indicate that the whilst the natural soil is Stiff Silty Clay, with 600-650mm of Clayey Silt soil and fill over top of it, the steps and block walls have been constructed on Loose Fill.

It is likely that during construction of the basement, excavation of the site extended a distance beyond the basement footprint to allow for installation and waterproofing of the basement walls, then once erected the basement walls were backfilled with “uncontrolled fill”. The basement walls and the ground level slab supported by them are founded onto Stiff natural soils, whilst the external structures are founded onto the loose fill, which has resulted in differential movement between them.

**RECOMMENDATIONS:**

It is not practically possible to keep the existing external structures and return them to their required height/levels. Our recommended course of action is to remove the existing external structures, then re-build them incorporating footings founded onto the natural Stiff Clay soils via screw piers or bored concrete piers. It is likely that the founding depth for piers will be at/near the basement floor level.

Because the adjacent paths on both the north and south side of the building have settled with the steps, when the steps are replaced at the correct level, the first tread height adjacent to the path will exceed the legal limit. Therefore, some sections of path will also need to be replaced.

Yours sincerely



Jeff Scimonello.

B.Eng.(Civil/Structural),R.P.E.Q.4243, PE0003051, EC-36513, M.I.E.Aust 232856, CPEng., NER  
APEC Engineer IntPE(Aust).

## APPENDIX A



Fig 1. Entry steps on South side of building.



Fig 2. Wing wall at west end of steps. Treads have an obvious slope towards the south. Crack width varies indicating a rotation of the wall and steps.



Fig 3. Gap indicates vertical settlement of the steps in addition to rotation.



Fig 4. End view of west end wing wall indicates wall has settled whilst ground floor slab has not.



Fig 5. Gap indicates steps have rotated towards the south, away from the ground floor slab.



Fig 6. Top view of north wing wall. Retained soil has caused the top of the wall to rotate towards the south.



Fig 7. Tiled slab between steps and council footpath may need to be replaced after steps have been rebuilt.

## APPENDIX B



Fig 8. Steps & path on North side of building.



Fig 9. Gap indicates steps and path have settled downwards.

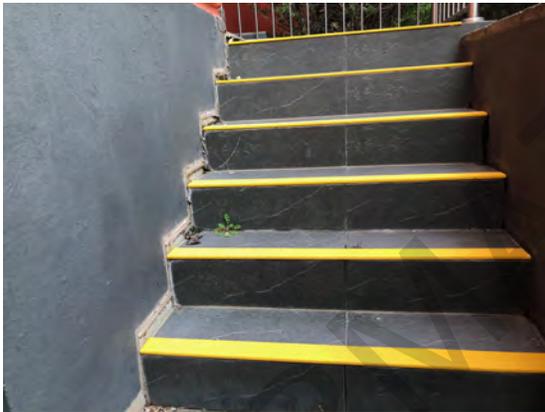


Fig 10. Front view of steps



Fig 11. Step between stair landing and ground level slab due to stair settlement.



Fig 12. Blockwork supporting landing at top of steps.

INFORMATION ONLY



## **BUILDING REPORT**

**Property:** Common Property – 388 Murray Street Preston

**Party the report is for:** The owners corporation committee

**Instructions received from:** Access Strata Management Pty Ltd

**Inspection Dates:** 26 August 2021

**Date of Report:** 25 October 2021

## CONTENTS

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REPORT DISCLAIMER	44

ATTACHMENTS	DESCRIPTION
ATTACHMENT 'A'	CV – JEFF BECK

## REPORT DETAILS

Property:	Common Property – 388 Murray Street Preston
Party the report is for:	The owners corporation committee
Inspection dates:	26 August 2021
Report date:	25 October 2021
Report prepared by:	Jeff Beck – Building Consultant

## REPORT NOTES

It is my interpretation of the Plan of Subdivision that common property includes the external cladding, the structure of the walls, floors and ceilings of the building which is owned by the Owners Corporation. This should be confirmed by a legal practitioner.

There are recommendations within this report for further consultants to attend the building for items that are outside my area of experience and qualification.

This report details building defects only, items that I consider that relate to normal building maintenance have not been included in this report.

## PROPERTY

The main entrance to the building faces South, the site is relatively flat and level.

The property comprises a mixed-use complex with a Class 7 basement carpark and five levels of Class 2 residential units.

The building is constructed from a mixture of reinforced concrete elements, cement blockwork and light weight construction.

The weather was fine on the day of my inspection.

## DOCUMENTS

In order to compile this report, I have been provided with a copy of the following documents.

- Drew Rudd Engineers report dated 6 September 2021;
- Chadoak Plumbing report dated 18 June 2021;
- CMET Technology P/L dated 11 May 2021.

## EXECUTIVE SUMMARY

There are recommendations within this report that require further consultants to attend the building, complete inspections or audits and produce reports. Aside from the engagement of a fire safety engineer to assess the roof void, these recommendations are advisory only as I do not consider there is an immediate health and safety risk to the occupants of the building.

Until such time as consideration is given to further reports being completed, a costing for rectification cannot be contemplated. Due to the extent of defective works, I recommend a quantity surveyor be engaged to complete a costing for rectification.

Documented throughout this report are building defects, some are causing water ingress into sole occupancy units and common property at the building.

There is damage to the building from water ingress and a buildup of moisture.

I have not inspected any sole occupancy units. Reports by others indicate mould is evident in locations of water ingress. Mould is a serious health and safety concern for occupants.

There is white staining on the ceiling and floor around drain penetrations in the basement carpark which are formed from failed waterproofing of the terraces. These present as moisture laden salts otherwise known as efflorescence.

The initial emergence of a white substance from concrete products is referred to as efflorescence which is caused when soluble salts and other water dispersible materials come to the surface when moist conditions prevail.

Stormwater is entering the building from the following locations,

- Through poorly sealed and cracked external cladding.
- From external cladding sealed the base which prevents moisture behind the cladding from discharging away from the building. Moisture is directed back into and further down the building.
- Masonry wall/floor junctions which have not been properly flashed.
- From failed waterproof membranes on terraces and balconies.
- Failed water proofing within planter boxes.

Defective workmanship has caused water ingress into the building, and the consequential damage observed will continue to progress with time as the water ingress has not been halted.

(continued over)

Water ingress and build-up of moisture within the building is contrary to the BCA Performance Requirements of Part F1 of the BCA in relation to Damp and Weatherproofing:

## PART F1 DAMP AND WEATHERPROOFING

### OBJECTIVE

#### FO1

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

### PERFORMANCE REQUIREMENTS

#### FP1.1

Surface water, resulting from a storm having an average recurrence interval of 20 years and which is collected or concentrated by a building or sitework, must be disposed of in a way that avoids the likelihood of damage or nuisance to any other property.

#### FP1.2

Surface water, resulting from a storm having an average recurrence interval of 100 years must not enter the building.

#### Limitation:

FP1.2 does not apply to—

- (a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or
- (b) a garage, tool shed, sanitary compartment, or the like, forming part of a building used for other purposes; or
- (c) an open spectator stand or open-deck carpark.

#### FP1.3

A drainage system for the disposal of surface water must—

- (a) convey surface water to an appropriate outfall; and
- (b) avoid the entry of water into a building; and
- (c) avoid water damaging the building.

#### FP1.4

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

REPORT NOTES:

My visual inspections of the building, including the sole occupancy units was aided by the use of a Flir E60bx thermal image camera which was used to carry out moisture scans. This technology uses infrared radiation via an infrared camera. Energy on the surface of the objects scanned is converted into a thermal map. The hotter objects are pink/white, and the cooler objects are purple/black and several colours in between. This allows the thermographer to see thermal anomalies in the built environment. Rainwater or cold water is usually cooler than the surrounding elements and this assists with locating and tracking its source when it is not obvious visually and to record its presence in digital images.

A Protimeter Mini 2000 moisture meter was also used to identify unusually high moisture contents in various materials affected by moisture ingress. The manufacturer of the instrument states; "The red zone (20% and higher) represents excessive moisture levels. If sustained, red zone moisture levels will lead to damage in organic materials."

Defect description begins over the page.

## Item 1 – Fire separation

### Issue

Non-compliance in fire services and fire separation.

### Observations

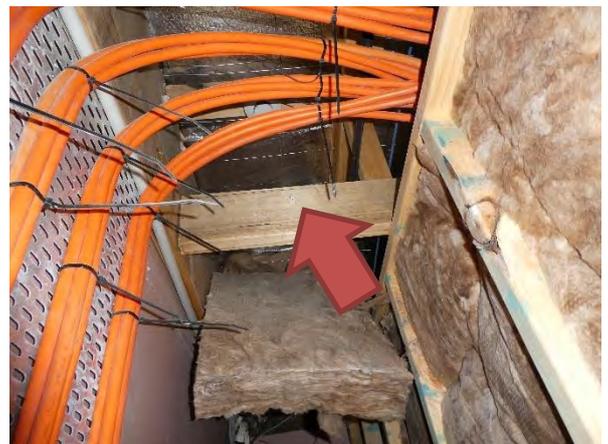
Generally, I observed:

- There was no combustible cladding installed at the building. I note that cement sheet cladding has been used, this material must be installed in accordance with the 'Red book' which is the manufacturers recommendations. This manual directs the cladding is only achieves a compliant fire-resistant level (FRL) when fire resistant plasterboard is installed behind the cladding.  
I cannot determine from a visual inspection as to whether this has been complied with by the builder.
- The top floor of the building has no fire separation from service cupboards through to the underside of the roof cladding.
- The services cupboards located on each floor of the building were found to be generally fire sealed at the floor and ceiling junctions. Some departures were identified as depicted in photographs over the page.
- Not all emergency lighting was illuminated.
- All metal fire resistant door jambs supporting the fire doors were not solid backed, these are to be checked for fire resistance level (FRL) requirements.
- Penetrations in the fire walls from services cupboards into sole occupancy units was found to be reasonable. There were penetrations found not to be fully sealed as depicted in photographs over the page.
- Refer to cladding section of this report in relation to potential foam cladding.

These issues are depicted in the photographs over the page:



Photograph 1. Services cupboards were inspected on each floor of the building.



Photograph 2. Services cupboards on the top floor revealed no fire separation extending through to the underside of the roof cladding.



Photograph 3. Base of services cupboards generally found to be fire sealed. Wall plasterboard not fixed at compliant centers.



Photograph 4. Unable to determine the ceilings in some services cupboards, should be fire resistant. Penetrations reasonably sealed.



Photograph 5. Large opening in water meter cupboards where pipes branch to individual lots.



Photograph 6. All floor construction found to be concrete with the exception of the upper story – to roof. Penetrations from sole occupancy units to common property hallways generally fire sealed.

### Opinion

It is beyond my qualification to complete a fire safety audit of the building.

### **RECOMMENDATION**

Based on my experience, fire separation is reasonable. However, a fire safety engineer should be considered for engagement to complete a full audit of the cement sheet external cladding, fire separation and fire services at the building.

Fire safety engineer recommendations to be implemented.

## Item 2 – Structure

### Issue

Wall lining in common property hallways have compressed on the ground floor and minor cracking observed on levels above.

### Observations

Plasterboard wall lining in the common property hallway of the ground floor, in particular the West elevation, has compressed and cracked. There appears to have been rectification completed whereby expansion joints have been retrospectively installed.

Compression of the joint in the sheets is evident at G27, which displays the worst of the cracking and damage. There has also been rectification works completed around the location of G17.

The damage at G27, West elevation of the building is adjacent to the carpark. This building movement extends through all levels of the building, in the same location.

This is depicted in the following photographs:



Photograph 7. Building movement has compressed the hallway plasterboard in the location of G27.

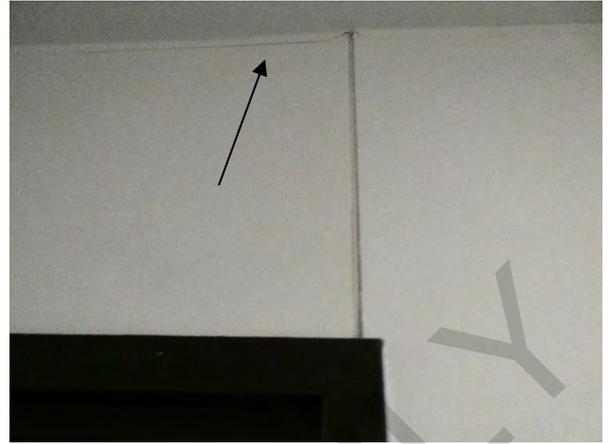


Photograph 8. The plasterboard can be seen with a deflection along the sheet join from compression or building movement. This can be seen from a normal viewing position.

(continued over)



Photograph 9. In the location of G17, there has been retrospective works to install movement control joints.



Photograph 10. In the location of 2.25 an articulation joint has been formed, however there is continued movement in the building evidenced by the crack in the wall/ceiling junction.



Photograph 11. In the location of 3.23 building movement has caused cracking of the plasterboard at the door entry.



Photograph 12. In the location of 4.18 building movement has caused cracking of the plasterboard at the door entry.

### Opinion

Assessment of the structure of the building is beyond the scope of this report.

It is likely this is general building settlement. However, this should be confirmed by a structural engineer.

### **RECOMMENDATION**

Structural engineer to provide an opinion on the building movement that extends from the ground floor through to the top floor, most predominately at the West elevation, of the building.

### **Item 3 – Sink hole**

#### **Issue**

A large depression has formed in the soil at the outer edge of the properties basement wall – on the adjacent property.

#### **Observations**

At the Western elevation of the building, where the ramp access to the basement is constructed, there is a large 'sink hole' that has formed in the soil on the adjacent property. The sink hole has formed adjacent to the ramp retaining wall.

Inspection of the neighbouring property revealed the sink hole is about 400mm deep and extends under the existing concrete path which has likely been in place for more than 60 years.

This is depicted in the following photographs:



Photograph 13. Sink hole as viewed from the carpark ramp.



Photograph 14. Stormwater downpipe and drain in the vicinity of the sink hole.

(continued over)



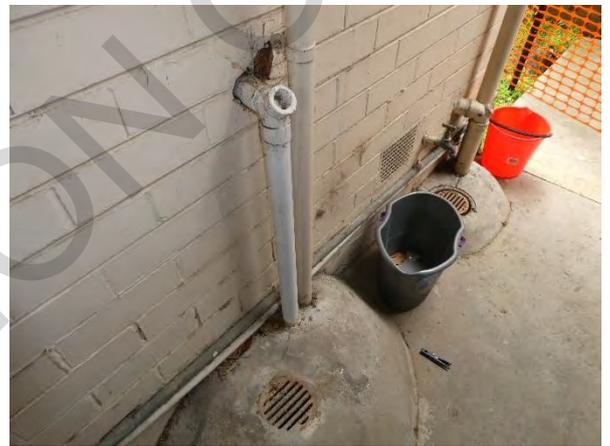
Photograph 15. Sink hole extends under the old existing concrete footpath which remains intact.



Photograph 16. Sink hole is approximately 400mm deep.



Photograph 17. Broken stormwater – earthenware - drain which allows uncontrolled stormwater to discharge onto the ground in the location of the sink hole.



Photograph 18. There are other underground earthenware drains in close proximity to the sinkhole, these need to be checked to ensure they remain sealed.

### Opinion

Uncontrolled stormwater from a large section of roof discharging onto the ground from the broken drain causes a saturation of the ground, in the location where the ground has been disturbed by the construction of the ramp. This disturbed soil may not have been properly compacted and therefore 'washed' into any agricultural drain at the base of the wall.

There are also other underground drains in close proximity to the sink hole which should be investigated.

### **RECOMMENDATION**

Structural engineer to provide an opinion on the sink hole.

## **Item 4 – Front entry**

### Issue

Two structural issues with the front entry:

- The front steps, which are structurally separated from the building have settled.
- The steel post supporting the building has evidence of corrosion at the base.

### Observations

The front entry steps are likely founded on a separate footing to that of the building. The steps and the footings they are supported on appear to have 'dropped' or settled causing damage to the steps and wall façade.

There is a steel post at the top of the stairs which is supporting several floors of the building, the post has surface corrosion at the base.

This is depicted in the following photographs:



Photograph 19. General view of the external steps at the entry of the building.



Photograph 20. The steps and the footings supporting them appear to have settled.

(continued over)



Photograph 21. Private lot terrace adjacent to the steps, damage to the façade consistent with footing movement.



Photograph 22. Damage from possible settlement of the footing.



Photograph 23. Terrace adjacent to front entry has shifted.



Photograph 24. Footing has separated from terrace slab.

(continued over)



Photograph 25. Steel post supporting several floors of the building.



Photograph 26. Steel post has evidence of corrosion on the base.

### Opinion

Assessment of the structure of the building is beyond the scope of this report.

It is likely this is general building settlement which may require underpinning of the footing. However, this should be confirmed by a structural engineer.

The base of the steel post should be assessed by the engineer, likely the post will need to be wire brushed clean of the corrosion and rust treated.

### **RECOMMENDATION**

Structural engineer to provide an opinion on the stair footing and steel post.

## Item 5 – Roof and stormwater

### Issue

The roof is reasonable, however has defective works.

### Observations

I made the following observations in relation to the roof, roof covering, flashings, and penetrations:

- There is treated timber constructed in contact with the metal roofing. The treatment within the timber may cause premature deterioration of the metal roof.
- There are no sumps constructed in some box gutters.
- The box gutter upstands do not cover roof framing battens in some locations.
- Roof flashing and cappings poorly constructed which are allowing stormwater to enter the building.
- Upright flashing not a compliant height, sarking not extending into the flashing.
- Fixings of flashing capping non-compliant as spacing exceeds HB-39.
- Rivets joining flashing and capping at non-compliant spacing.
- Downpipe spreaders discharging stormwater into joins in roof cladding.
- Rain heads that have non-compliant overflow provisions.
- External cladding not sealed around rain heads.

Photographs depicting works to seal the roof are provided below:



Photograph 27. Treated timber structure placed directly onto the metal roof sheets.



Photograph 28. Downpipe spreader does not comply with HB39.



Photograph 29. Oversized and joined apron flashing.



Photograph 30. Lack of turn down angle on the roof sheets in some locations.



Photograph 31. Appears there has been a retrospective flashing installed to cover the roof framing.



Photograph 32. Roof sarking extends into gutter. Whilst the sarking should emanate from under the roof sheets, it should not extend into the gutter as it allows water into the building via capillary action.



Photograph 33. Flat smaller roofs allow stormwater into the building via the rib ends.



Photograph 34. Downpipe spreader discharges stormwater directly into the ribs of the roof.



Photograph 35. Small roof constructed with little to no fall.



Photograph 36. One roof box gutter found to be very shallow – approximately 70mm.

### Opinion

Water ingress from the roof and stormwater has been documented at the building, and I understand a plumber has attended and rectified the water leak by installing a further flashing.

There is evidence of flashing which appears to be retrospectively installed. The use of silicone is excessive, these indicate possible temporary works have been completed to prevent water ingress and these measures are not compliant with HB – 39 - 1997.

The roof cladding and stormwater system, whilst reasonable, has not been constructed in accordance with AS/NZS 3500.3, HB-39 – 1997 or good building practice and has allowed moisture to enter the building.

Stormwater entering the building is a departure from the Performance Requirements of the Building Code of Australia, in particular FP1.3 and FP1.4.

### **RECOMMENDATION**

There has been roof leaks into the building.

There is non-compliance of the roof and stormwater.

I recommend the committee consider the engagement of a plumbing consultant that could provide a report for submission to the Victorian Building Authority Plumbing Industry Commission to enable them to investigate the identified issues.

The VBAPIC will oversee any rectification required.

## Item 6 - External lightweight cladding

### Issues

The Building Code of Australia (BCA) does not include a deemed-to-satisfy (DtS) cladding in relation to weather proofing of a class 2 building.

All cladding for a class 2, multi-story building is required to be assessed as an Alternate (Performance) Solution by the relevant building surveyor prior to the issuing of a building permit.

Alternate Solutions provide direction to a builder in relation to installing cladding in accordance with the manufacturers installation or design manuals. The relevant building surveyor is required to assess and approve the cladding systems as compliant when issuing the building permit.

The following lightweight cladding has been installed at the building:

- Cement sheet which has been rendered.

This lightweight cladding has not been installed in accordance with the manufactures installation or design manuals.

The building permit file would need to be procured to allow investigation of an Alternate Solution, approved by the relevant building surveyor.

### Observations

**Important note:** After reviewing the plan of subdivision I consider the external wall cladding will be common property, this should be confirmed by a legal practitioner.

Please refer to Item 1 of this report in relation to the construction of the wall for compliance with the fire resistance level (FRL) in accordance with the Building Code of Australia.

The cement sheet has not been constructed in accordance with the manufacturers installation manual as the sheets are sealed at the base and have poorly installed fixings.

The render coat has become badly faded and is opening up allowing moisture behind the cladding and into the wall cavity.

Photographs depicting the differing cladding is provided over the page:



Photograph 37. General view of the lightweight cement sheet external cladding.



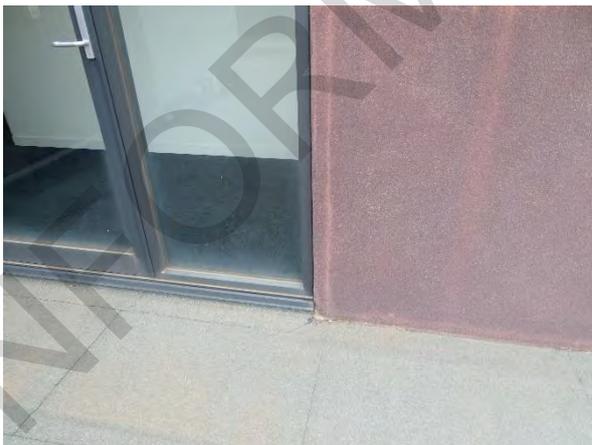
Photograph 38. All the lightweight cement sheet has been sealed at the base.



Photograph 39. Further view of the cement sheet sealed at the base.



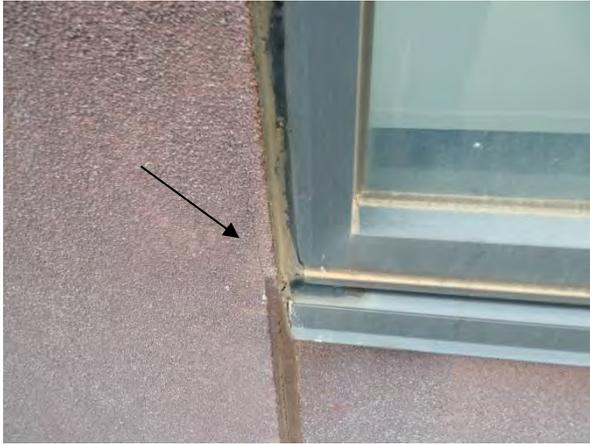
Photograph 40. Joints in the sheet can be seen through the thin render coat and the sheets have been installed horizontally.



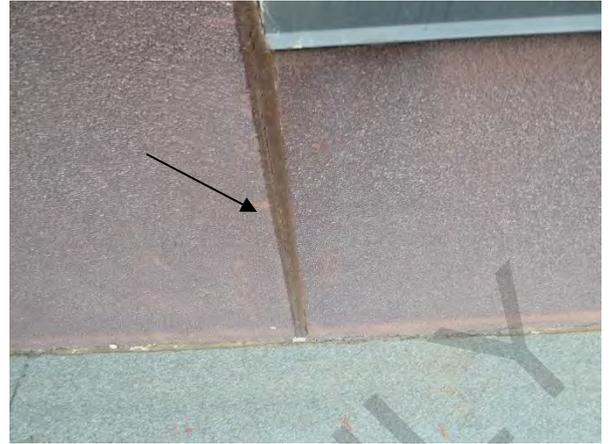
Photograph 41. Cement sheet cladding has been sealed at the base of terraces and balconies.



Photograph 42. Articulation joint has split open allowing moisture into the wall cavity which has been sealed at the base. Horizontal joint in the sheet also visible.



Photograph 43. Articulation joint has split open, and cracks have developed in the render coat. This allows moisture into the wall cavity where it is sealed at the base.



Photograph 44. Closer view, sealant split open, material sealed at the base.



Photograph 45. Poorly installed fixings are delaminating from the material which may evidence a lack of fire rating behind the cladding.



Photograph 46. Fixing has popped from the cladding taking the thin render coat with it.

### Opinion

There is no deemed-to-satisfy (DtS) cladding listed in the Building Code of Australia (BCA) as detailed in Part F1, see below an extract from the Building Code:

**PART F1**      **DAMP AND WEATHERPROOFING**

*Deemed-to-Satisfy Provisions*

**F1.0 Deemed-to-Satisfy Provisions**

(a) [Performance Requirement F1.4](#), for the prevention of the penetration of water through [external walls](#), must be complied with.

There are no [Deemed-to-Satisfy Provisions](#) for this [Performance Requirement](#) in respect of [external walls](#).

(continued over)

A check of the building permit needs to be completed to identify if an alternate solution was approved by the relevant building surveyor (RBS). All alternate solutions are required to be listed in the building permit in accordance with the Building Act 1993. The relevance of this is an alternate solution is a technical document which includes the manufacturer's installation instructions, this allows the builder to build in accordance with these instructions and further, allows the RBS to check the installation for compliance.

The James Hardie cement sheet installation guide directs that the base of all cladding must finish above surfaces below (such as finished floor tiles of terraces, balconies, and roof flashings) and must include a wall flashing to allow any moisture within the cavity to discharge away from the building.

Extracts from the installation manual provided below and over the page:

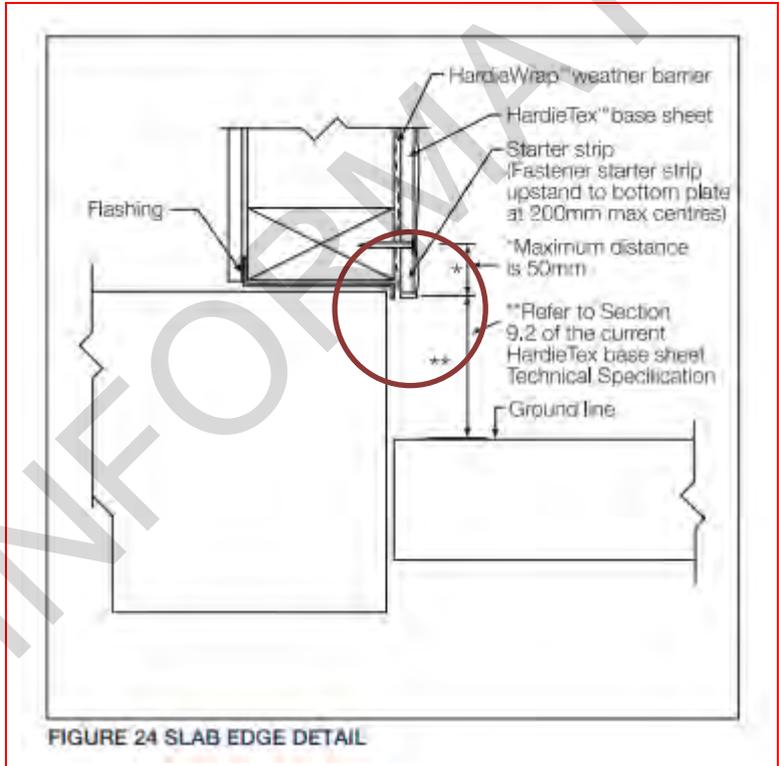
# 9 DETAILS

## 9.1 GENERAL

Maintain a minimum 50mm clearance between James Hardie external cladding and roofs, decks, paths, steps and driveways.

Adjacent finished grade must slope away from the building in accordance with local building codes, typically a minimum slope of 50mm minimum over the first metre.

Do not install external cladding such that it may remain in contact with standing water.



(continued over)

Installing sheets horizontally is not recommended by the manufacturer as these joints can open up and allow moisture directly into the wall cavity.

### 3.1 GENERAL INSTALLATION

Planning sheet layout is an essential part of installation to minimise the number of sheet joints and material wastage. The two main areas to be considered are sheet orientation and jointing.

In all cases use full sheets and do not use offcuts to clad walls.

See Figure 9.

Sheets must be fixed vertically, commencing from a corner. Where steel framing is used, ensure studs are placed so sheets can be progressively fixed in the sequence indicated in Figure 6.

### 3.2 ORIENTATION

#### 3.2.1 Vertical

Vertical sheet installation layout is recommended for the following reasons:

- The longer sides of the sheets are recessed, facilitating vertical sheet joints, horizontally laid sheet sheets could require significant site grinding.
- Noggings can be staggered rather than in line.
- Vertical sheet installation minimises wastage as sheet lengths and widths suit wall heights and stud spacing.
- After coating, vertical joints are generally less obvious in glancing light conditions than horizontal joints.

#### 3.2.2 Horizontal

Horizontal sheet layout is only recommended where the maximum depth of cladding is 1200mm (one sheet width), horizontal sheet installation is more suitable for applications such as fascias.

When fixing sheets horizontally. Refer to Table 2 for fastener spacings. Ensure sheets are fastened to all studs.

The design manual also directs that window and sliding door heads (or tops) must be flashed and a gap left between the cement sheet and the aluminum frame surrounds that is filled with elastomeric sealant to ensure building movement does not open the joint thereby allowing moisture into the wall cavity.

Sealing the cladding at the base of the walls and to the heads of window and sliding door frames prevents any moisture within the wall cavity from discharging away from the building, instead water is directed back into the building which is causing water damage to perishable building elements within the building.

Water ingress and build-up of moisture within the building is contrary to the BCA Performance Requirements of Part F1 of the BCA – Volume 1 - Damp and Weatherproofing:

(Please see over)

## PART F1 DAMP AND WEATHERPROOFING

### OBJECTIVE

#### FO1

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

### PERFORMANCE REQUIREMENTS

#### FP1.1

Surface water, resulting from a storm having an average recurrence interval of 20 years and which is collected or concentrated by a building or sitework, must be disposed of in a way that avoids the likelihood of damage or nuisance to any other property.

#### FP1.2

Surface water, resulting from a storm having an average recurrence interval of 100 years must not enter the building.

#### Limitation:

FP1.2 does not apply to—

- (a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or
- (b) a garage, tool shed, sanitary compartment, or the like, forming part of a building used for other purposes; or
- (c) an open spectator stand or open-deck carpark.

#### FP1.3

A drainage system for the disposal of surface water must—

- (a) convey surface water to an appropriate outfall; and
- (b) avoid the entry of water into a building; and
- (c) avoid water damaging the building.

#### FP1.4

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

Extensive rectification of lightweight cladding is required.

From my experience the Owners Corporation Committee will need to consider the following prior to cladding replacement:

- Removal of cladding will facilitate the removal of roof and stormwater items such as rain heads, downpipes, flashing's, and capping's.

This provides an opportunity to rectify all defective works with at least these items of the roof and stormwater.

(continued over)

- Rotted timber framing is a possibility. Identification of all damaged framing members that will need to be replaced cannot be quantified unless a full destructive investigation is completed at the building, that is not practical.

For this reason, there could be requests for variations to the cost of works to replace cladding (in isolation) from a rectification builder if the contract does not address this issue.

- In any proposed cladding removal contract, I recommend a lawyer be engaged to work with the property manager and owners corporation to ensure the contract accurately reflects the works being completed.
- I recommend the OC committee considers engaging the services of a Superintendent or independent building consultant to conduct regular checks of any rectification works being completed by the builder to ensure works are completed in accordance with the building permit, the manufacturers recommendations and to a workmanlike standard.

**Important note:**

There is an unknown cladding on the building as highlighted below. The plans appear to illustrate this was to be a metal cladding, but a rendered board has been instead. This could be combustible foam cladding.

This cladding should be investigated for compliance with the approved plans and to ensure it is non-combustible. A fire safety engineer may be required for investigation.



## **Item 7 – Common property terrace.**

### Issue

There is water and efflorescence leeching into the basement carpark from the terrace and planter boxes over.

Water testing has revealed the planter boxes have failed.

There is extensive efflorescence in grout lines of the terrace, particularly around drain penetrations.

There are non-compliant movement control joints in the external tiling.

### Observation

The terraces have undersized drains, and the fall or gradient of the finished floor tiles is insufficient allowing water to pond on the balcony. This is exacerbated by the undersized drains servicing the large expanse of the main terrace.

The large expansive terrace and concrete slab substrate under does not have enough fall to the outlets. The drains are also significantly undersized which causes stormwater to pond on the surface of the tiling eventually saturating the grout, screed, and adhesive of the tiling system. Whilst I was unable to inspect the privately owned terrace at the Southeast corner of the building, it is likely the conditions are identical.

The saturation of the terrace substrate is causing excessive efflorescence to form in the grout lines across the terrace. Whilst a waterproof membrane is in place, the termination around the drains and drains within the planter boxes have failed causing salt laden moisture to leech into the basement carpark.

The terrace at the Southeast corner of the building is leeching the same salts down the facade of the building and into the basement carpark below.

Movement control (articulation joints) installed in the large internal terrace are not compliant with AS3958.1 – 2007 Guide to the installation of ceramic tiles, which is the industry accepted Standard for tiling in Victoria. All movement controls must not exceed 4.5m square in external environments.

Planter boxes allow moisture to egress at the base of the blockwork walls indicating the membrane is either not compliant or has failed. Consideration to a thicker more robust water proofing system needed to be considered by the builder due to the aggressive tree root systems planted at the property.

This is depicted in the photographs beginning over the page:



Photograph 47. General view of the common property terrace.



Photograph 48. The terrace is a large expanse of floor tiles which has very small drain outlets.



Photograph 49. The planter boxes have been poorly constructed allowing moisture to exit at the base of the wall.



Photograph 50. Efflorescence is evident throughout the terrace tiling, emanating from grout lines.



Photograph 51. There is a lack of fall to the outlets, which are undersized.



Photograph 52. Further view of the efflorescence emanating from the grout lines.



Photograph 53. There is efflorescence around drain penetrations, the drains are undersized, and the saturation of the screed and adhesive continues to keep the upper efflorescence wet.

The terraces and balconies are constructed almost flat with little to no fall to the undersized drains.



Photograph 54. There are expansion joints in the tiling, however these exceed 4.5m in each direction.



Photograph 55. Private lot terrace at the Southeast corner of the building, the terrace is leeching efflorescence down the façade of the building and into the basement below.



Photograph 56. Further view.

### Consequential damage

The defective water proofing, particularly around drain penetrations in both the terraces and planter boxes is allowing salt laden moisture to leech into the basement. This is replicated at the privately owned lot at the Southeast corner of the building.

The water leeching into the basement has not been halted and there has been attempts to control the damage to surfaces under these locations with the placement of stainless-steel trays, these trays do not provide a long-term solution to the failed membranes on the terrace and within planter boxes.

Efflorescence stains surfaces including permanently damaging the paint surface of vehicles.

An opinion from a structural engineer is required in relation to the long-term damage to steel reinforcement within the concrete from prolonged exposure to moisture.

This is depicted in the following photographs:



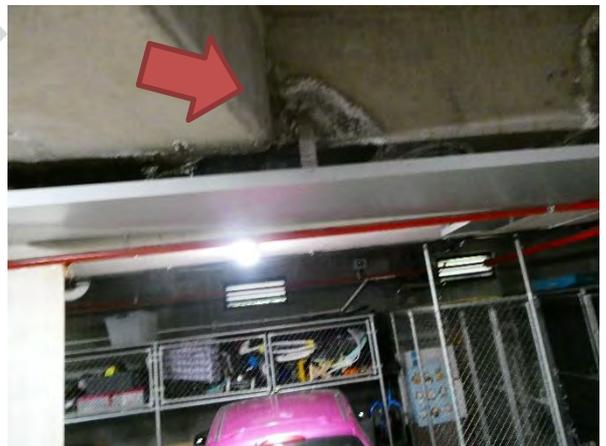
Photograph 57. Stainless steel drip trays installed to capture salt laden moisture entering the basement.



Photograph 58. Active water leaks into the basement continue, stainless steel trays are evident in locations under the terrace and planter boxes over.



Photograph 59. Active water leak into the basement. These salt laden salt stain surfaces.



Photograph 60. Further view.

(continued over)



Photograph 61. Salt laden deposits on the floor of the basement. The salts stain surfaces permanently including vehicle paint.



Photograph 62. Cracks in the concrete infill slab have been filled with an epoxy sealant, these are most likely usual shrinkage cracks, but should be commented on by a structural engineer.

### Opinion

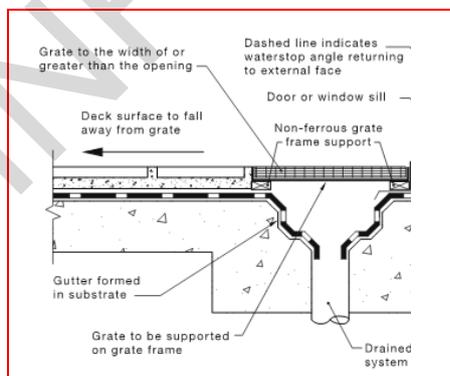
Please refer to the report of CMET Technology P/L dated 11 May 2021, I consider this report compliments that report, providing breaches of the Building Code and its deemed-to-satisfy provisions.

The builder was required to construct the external wet areas in accordance with the Building Code of Australia (BCA) and its referenced standard – AS4654.2 – 2012 – Waterproofing membranes for above ground use to ensure compliance with the deemed-to-satisfy Performance Requirements of the Code.

The terrace has not been constructed in accordance with the BCA or its referenced standard AS4654.2 - 2012 which requires all external terraces and decks to have a minimum 1 in 100 fall or gradient away from the building to appropriately sized drains. The expansive terrace in the middle of the property allows ponding of surface stormwater around undersized drains. This causes saturation of the screed/adhesive via the porous grout.

The drains do not have a waterproof membrane extending into the throat of drain to protect the penetration through the slab.

A compliant detail of the membrane termination into the drain is detailed below:



Failure to construct a compliant fall allows moisture to pond under the tiling for prolonged periods as evidenced by the efflorescence in grout lines. The prolonged exposure to moisture has likely emulsified the waterproof membrane at the drain termination, allowing moisture to enter the basement below through the penetration in the slab.

An external tiled surface must have a fall or gradient of 1mm in 100mm as per AS3958.1:

### **D1 GENERAL**

The primary consideration for falls in floor finishes is to ensure water does not remain on the finished floor in a manner that can adversely affect the health or amenity of the occupants or deteriorate building elements.

Falls in floor finishes should ensure water exits the area at the floor waste or doorway if that is the designed exit point (e.g. laundry door to exterior). Water should not pond on the floor, with the exception of residual water remaining due to surface tension.

### **D3 FALL RATIOS**

The recommended ratio of fall within a shower area is between 1:60 and 1:80.

The recommended ratio of fall in other wet areas is between 1:80 and 1:100.

In some circumstances the fall in the floor finishes in the same area may vary.

Where falls steeper than 1:100 are not achievable, the effectiveness of the floor drainage should be confirmed to ensure it meets the primary consideration set down in Paragraph D1 above.

Clause 5.4.5 states:

(b) *Intermediate movement joints* Intermediate joints type (c), (d) or (e), as shown in Figure 5.1, should be inserted at intermediate positions to accommodate deflections of the base and movements in the flooring.

They should be provided in evenly spaced positions at approximately 4.5 m centres, or at locations where stress might reasonably be expected in—

- (i) internal floors, where any dimension exceeds 9 m or 6 m if subjected to sunlight; and
- (ii) external floors where any dimension exceeds 4.5 m.

On suspended floors, stress-relieving joints type (e), as shown in Figure 5.1, should be inserted where flexing is likely to occur (e.g., over supporting walls or beams).

Australian Standard AS4654.2 – 2012, the deemed to satisfy requirement of the building code also states:

(continued over)

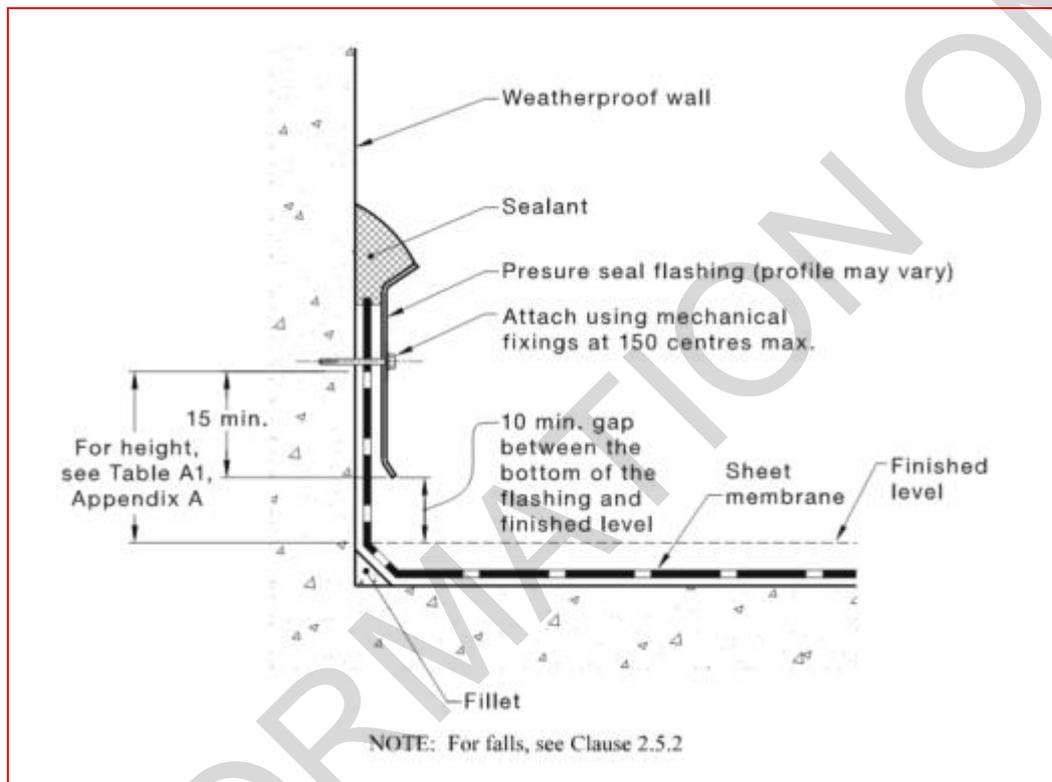
### 2.5.2 Falls

Falls in finishes shall ensure water drains to the drainage outlet. Water shall not be retained on the finished surface with the exception of residual water remaining due to surface tension.

The fall shall be in the structural substrate, or formed by a screed over the structural substrate.

NOTE: Falls for surface drainage should be no flatter than 1 in 100.

The external wall of the building allows water into the building and the planter boxes allow moisture to egress back onto floor tiling of the terrace. This is because a proper wall/floor membrane has not been constructed in accordance with AS4654.2:



The planter box waterproof membranes have failed, both at the external wall junction with the floor and the drain penetration. The builder has planter trees such as Manchurian Pears that have very aggressive root systems. There has been no appropriate membrane installed to ensure the root system did not damage the membrane.

AS4654.2 – 2012 states:

### 2.2 PREVENTION OF DAMAGE

Where the waterproofing system is to come in contact with root systems of vegetation, it shall be root resistant.

Water ingress into the building is contrary to the Building Code of Australia (BCA) Performance Requirements at FP1.2, FP1.3 and FP1.4. The requirements of Part F1 of the BCA in relation to Damp and Weatherproofing as below:

**PART F1**      DAMP AND WEATHERPROOFING

**OBJECTIVE**

**FO1**

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

**PERFORMANCE REQUIREMENTS**

**FP1.1**

Surface water, resulting from a storm having an average recurrence interval of 20 years and which is collected or concentrated by a building or sitework, must be disposed of in a way that avoids the likelihood of damage or nuisance to any other property.

**FP1.2**

Surface water, resulting from a storm having an average recurrence interval of 100 years must not enter the building.

**Limitation:**

FP1.2 does not apply to—

- (a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or
- (b) a garage, tool shed, sanitary compartment, or the like, forming part of a building used for other purposes; or
- (c) an open spectator stand or open-deck carpark.

**FP1.3**

A drainage system for the disposal of surface water must—

- (a) convey surface water to an appropriate outfall; and
- (b) avoid the entry of water into a building; and
- (c) avoid water damaging the building.

**FP1.4**

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

## **Item 8 – North elevation entry**

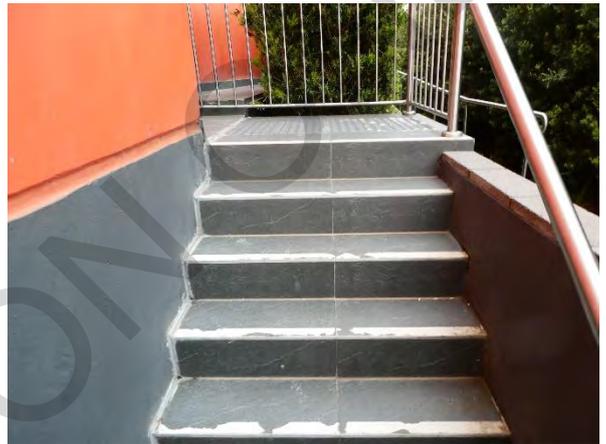
### **Issue and Observations**

The North elevation entry stairs have the following defects:

- The footing supporting the stair and entry appears to be ‘sinking’ or settling.
- The terrace has been constructed flat with no fall away from the building. This allows water to pond on the floor tiles causing efflorescence.
- The failure to construct a compliant hob/freeboard is allowing stormwater to enter the building.



Photograph 63. North entry stairs to the building. There is water emanating from under the tiling and leeching down the wall.



Photograph 64. Entry stairs, tactile markers require replacement.



Photograph 65. Entry to the building, there is no fall on the tiling away from the building and prolonged exposure to moisture has caused efflorescence to form in the grout joints.



Photograph 66. Stormwater ponds at the entry door due to a lack of fall in the floor tiling. The water was observed entering the building under the door. There is an insufficient hob or freeboard under the entry door.

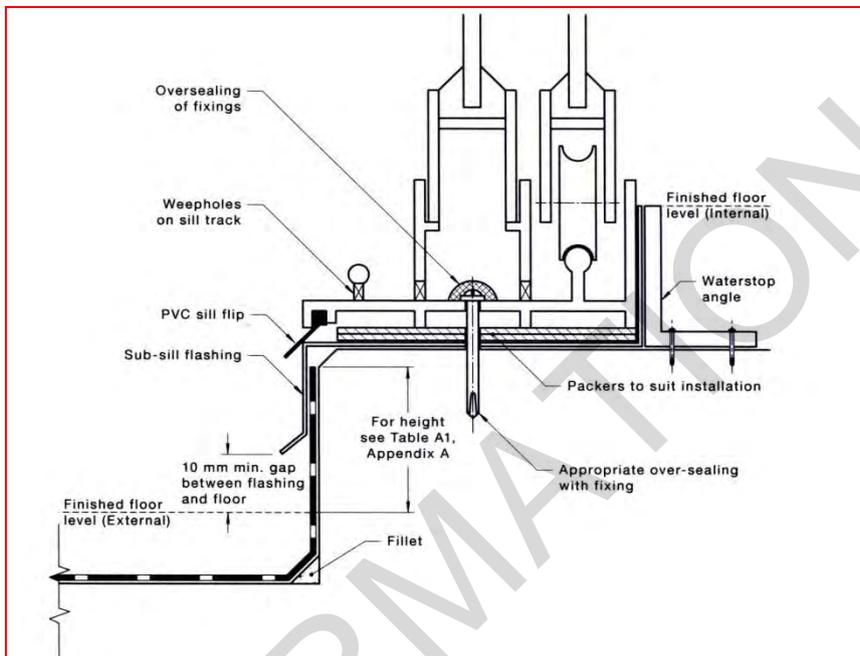
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## Opinion

Australian Standard AS4654.2 – 2012 Waterproof membranes for above ground use direct that all tiled surfaces of terrace, balconies and landings are to a fall or gradient away from the building to allow stormwater to shed away from the building.

There is no fall on the landing, therefore stormwater is permitted to pond on the surface causing the grout, adhesive, and screed to be saturated with stormwater. The prolonged exposure to moisture has caused efflorescence to form in the grout lines and water can be seen leeching down the face of the bluestone wall forming the stairs.

A compliant hob/freeboard has not been formed under the door entry to prevent stormwater entering the building. A diagram of a compliant door hob/freeboard from AS4654.2 has been provided below.



Water entry into the building was observed. Efflorescence, which is a building defect as detailed in the Victorian Building Authority's Guide to Standards and Tolerances, is evident throughout the entry floor tiling.

The floor tiles are to be removed and replaced, a compliant hob/freeboard to be constructed and an appropriate waterproof membrane installed.

Water ingress into the building is contrary to the Building Code of Australia (BCA) Performance Requirements at FP1.2, FP1.3 and FP1.4. The requirements of Part F1 of the BCA in relation to Damp and Weatherproofing

## **Item 9 – Base of blockwork walls.**

### Issue and Observations

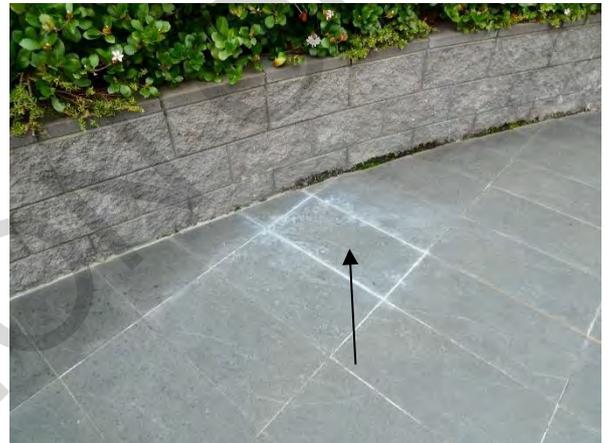
The base of blockwork has no flashing installed and/or a rebate that prevent lateral transfer of water into wall cavities or does not prevent moisture egressing the planter boxes.

Whilst this is a common property report only, I have been provided with a report prepared by Chadoak Plumbing which details water ingress into Apartment 22 from the poorly detail base of the blockwork walls. The plumbers completed water dye testing and confirmed the leak.

The same poor detail is evidenced in other locations around the building with water able to leech from planter boxes and the base of external walls.



Photograph 67. Damp blockwork from prolonged exposure to moisture.



Photograph 68. Moss at the base of the planter box block works and efflorescence in the tile grout lines indicate water egress from the planter box.

### Opinion

The blockwork/floor detail of both external cladding and planter boxes have not been constructed with a proper waterproof membrane or flashing to prevent lateral transfer of moisture both into sole occupancy units and egress from planter boxes.

Please refer to Item 7 of this report for the detail relating to departures from the Building Code of Australia causing the water damage.

## **Item 10 – Balcony leak**

### **Issue and Observations**

I noted what appears to be evidence of mould and water staining of a soffit under an external balcony.



Photograph 69. Staining evident on the soffit under a balcony.

### **Opinion**

The observation was noted at the South elevation of the building, the two apartments remain unknown to me.

Further investigation is required to determine if this is water damage and the source of the ingress.

### **RECOMMENDATION**

This location would need to be inspected to determine if this is water damage and the causation of same.

## Item 11- Condensation

### Issue/observations

There is condensation evident at the building.

At the time of my inspection, I noted several units with water external glazing as depicted below:



Photograph 70. General example of condensation noted on windows/sliding doors.



Photograph 71. This is considered to be a large amount of moisture.

### Opinion

#### Condensation definition

The Australian Building Codes Board (ABCB) released an Information Booklet titled 'Condensation in Buildings'.

This handbook is not a mandatory or regulatory document, it was released to provide general information only to assist building practitioners such as architects, designers, builders and building surveyors in the assessment and management of the risk of condensation and the effects of the water to the building elements.

This document defines condensation as:

*"Air contains invisible water vapour. The higher the air temperature, the more water vapour it can hold. The lower the air temperature, the less water vapour it can hold. Where warm air contacts a cold surface, it cools. When the air cools below a temperature known as the 'dew point', invisible water vapour condenses to visible water droplets on the cold surface. The water that is formed is known as condensate and the process is called condensation. If more water vapour is present, further condensation occurs which may lead to a trickle of condensate. However, the process is reversible - if the surface is warmed above the dew point, the condensation will evaporate and may leave the surface dry."*

Condensation within a building can form as visible surface condensation or can form on surfaces within the building fabric, known as interstitial condensation. In cold weather, interstitial condensation is caused when water vapour inside a building can move outward via diffusion through permeable building fabrics or air movement and reach a surface within the building cavity that is below the dew point. That surface may be smooth such as sheet metal, or fibrous, such as glass wool insulation. A cold surface that condenses vapour absorbs the heat of vaporisation, raising its temperature slightly. Thus, condensation can be most rapid on a metal frame, and less rapid on an insulation material. But given time, both might condense a considerable amount of water.

Interstitial condensation can be far more damaging to the building than surface condensation. Interstitial condensation can go unnoticed and if the building fabric has not been designed to allow moisture to dry from within it can become trapped and compromise the durability of the building and the health of the occupants.”

### Opinion

Condensation within a building is generally not considered to be a building defect. However, the Victorian Building Authority (VBA) Guide to Standards and Tolerances Part 18.03 states:

#### 18.03 Condensation

Condensation is a common problem in buildings, particularly in bathrooms and laundries, and can occur on windows, under unlined roofs or elsewhere. Where the requirements of the *Building Code of Australia* have been complied with, the responsibility for controlling condensation by maintaining adequate ventilation through the installation and use of exhaust fans or other means is the responsibility of the owner.

Condensation is a defect if the builder has not complied with the relevant clauses of the *Building Code of Australia*.

Further investigation of the construction of the walls pertaining to the energy rating report would need to be considered by the owners corporation committee. If works have been completed that contribute to the condensation, then the builder may be responsible for the rectification of the defective work and any consequential damage.

Moisture buildup within a building is a departure from the Objective and Functional Statements of the Building Code of Australia stated below:

**PART F1**      DAMP AND WEATHERPROOFING

**OBJECTIVE**

**FO1**

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

## 12 - Other items

### Tactile indicators

Whilst technically a maintenance item, the tactile markers on all stairs and ramps have delaminated in part and require replacement.

I highlight this as it is a health and safety issue for occupants and visitors to the building and this could impact the OC insurance for the building.



Photograph 72. Tactile indicators required replacement.

### Hot water service screens

The screens protecting the hot water services have been damaged by the heat emitted from the units. The screens are corroding and staining adjacent surfaces, I do not consider these to be fit for purpose and should be replaced.



Photograph 73. Heat damaged screens.

### Murray Road footpath

Post construction, the footpath was not reinstated in a proper and workmanlike manner.

In my opinion, the builder was obligated to return Council property back to the condition it was in prior to construction.



Photograph 74. Damaged concrete footpath remains post construction.

### Mechanical services

I am not a mechanical services engineer and have no qualifications in this field.

#### **RECOMMENDATION**

If the property manager or the owner's corporation committee have any concerns in relation to the mechanical services or vehicle exhaust systems in the basement, I recommend a mechanical services engineer be engaged to inspect and report.

(continued over)

Access and Egress - Disability

I am not an access and egress expert and have no qualifications in this field.

I did note the front entry of the building has damaged and delaminating tactile markers.

Unless there is a report within the building permit documents stating the disability and access provisions of the Building Code have been met, I recommend an inspection and report is commissioned.

**RECOMMENDATION**

Disability access in general and in relation to a multi-story building and its specific requirements to Part D of the Building Code is critical to the health and safety of the occupants.

Fire engineer engaged for Item 1 of this report to also consider Part D of the Building Code.

## VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL STATEMENT

Statement in accordance with Practice Note 2 – Expert Evidence as required by the Victorian Civil and Administrative Tribunal (VCAT).

In contemplation that this report will be presented to the Domestic Building List of VCAT, I state that:

- The details of my address, qualifications and experience are set out in the Curriculum Vitae included as Attachment 'A' of this report.
- My area of expertise is the assessment of building works. I have the expertise to make this report due to my familiarity with this type of construction and a sound knowledge of the issues in dispute.
- I have been provided with the documents listed on page 3 of this report.
- My instructions are set out on page 3 of this report.
- This report has been prepared based on a visual inspection of the works. I have not removed any fixtures or material, conducted, or caused to be conducted any detailed tests or experiments upon which I rely in making this report apart from items detailed in this report.
- The issue of fire engineering, structural engineering, hydraulics services and mechanical ventilation are outside my area of expertise. Apart from that item, there are no issues or questions falling outside my expertise and the report is accurate.
- There are recommendations in the report which need to be completed and therefore parts of this report remain incomplete.

I have made all the inquiries that I believe are necessary and appropriate at the time of authoring this report and no matters of significance, which I regard as relevant have to my knowledge been withheld from the tribunal.



Building Report prepared by Jeff Beck *MASBC MAIBS*  
Registered Building Practitioner  
Principal  
JWB and Associates P/L

### **Building Inspection Report Disclaimer:**

1. This building has been inspected on the date and in the prevailing weather and environmental conditions specified in this report. The report describes the condition of those elements of the property described in the client brief and lists faults then visible.
2. The report does not include:
  - (a) Faults in inaccessible areas of the building.
  - (b) Faults not apparent on visual inspection.
  - (c) Faults only apparent in different weather or environmental conditions.
  - (d) Faults resulting from different uses of the building.
  - (e) Minor faults (i.e., hairline plaster cracks, jamming doors, windows, and catches, etc.).
  - (f) Faults outside the scope of the client brief.
3. Unless otherwise specified:
  - (a) No soil has been excavated.
  - (b) No plants or trees have been removed.
  - (c) No fixtures, fittings, cladding or lining materials have been removed.
  - (d) No items of furniture or chattels have been moved.
  - (e) No enquiries of Councils or other Authorities or persons have been made for the purposes of inspecting the building and providing this report.
4. This report is provided solely for the use of the clients named on the face of this report and no responsibility to other persons is accepted.
5. This report does not include any special investigation of insect attack (e.g., borer, termite etc.) or soil contamination. Any reference to this has been based on a casual visual inspection. JWB & Associates P/L recommends that you engage a licensed pest inspector to conduct an inspection and provide a report on potential pest infestation.
6. Any Scope of Works is to be viewed as a guide and contractors should not rely on the information provided, contractors are to ensure they make all enquiries in relation to the works being proposed.
7. Cost estimates are to be viewed as estimates only and should not be regarded as a quotation.



jwb & associates p/l  
building consultants

**DRAFT**

## SUPPLEMENTARY REPORT ON PROPERTY

PROPERTY: 388 Murray Road Preston

**PARTY THE REPORT IS FOR:**

Owners Corporation 1 on Plan PS733538P

**INSTRUCTIONS RECEIVED FROM:**

Holding Redlich

**COURT REFERENCE:**

To be advised

**REPORT DATE:**

22 October 2025

*This document is protected by legal professional privilege. To ensure that privilege is not waived, please keep this document confidential and in a secure place. This document should not be distributed, nor any reference to it made, to any person not directly involved in making decisions on the subject matter of this document. If this document is requested by a government officer, please do not show it or discuss its contents with the officer, but contact Holding Redlich immediately to ensure that privilege is claimed over the document.*

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## REPORT DETAILS

Property:	388 Murray Road Preston
Party the report is for:	Owners Corporations 1– PS733538P
Inspection dates:	26 August 2021, 4 November 2024 6 December 2024 and 9 May 2025.
Report date:	22 October 2025
Report prepared	Jeff Beck – Building Consultant

## INSTRUCTIONS

I have been instructed by Ms. Jessica Xu of Holding Redlich to prepare a report setting out my responses to the following questions:

20. You are engaged to:

- (a) review the documents provided to you in this brief and the documents previously provided to you or used in the preparation of your Building Report;
- (b) refer to your Building Report, in particular, the areas where you have recommended further investigations be carried out;
- (c) inspect the Property and adjoining apartments (if access can be provided), for the purposes of carrying out necessary investigations to determine any new sources of water ingress or the source of water ingress or other defects identified in your Building Report; and
- (d) having regard to:
  - (i) the building design; and
  - (ii) the *Building Act 1993* (Building Act), the *Building Regulations 2018* (Building Regulations), the Building Code of Australia (Code) and any relevant Australian Standards at the time of the issue of the Building Permits,

prepare a report which sets out your opinion on:

- (iii) the source or sources of the water ingress or other defects occurring at the Property; and
- (iv) having identified the source or sources of water ingress or other defects occurring at the Property following your further investigations:
  - (A) whether the construction of the Property complies with the Building Act, the Building Regulations, the Code and any relevant Australian Standards, with respect to the water ingress;
  - (B) the nature, extent and cause of any source or sources of water ingress or other defects or related non-compliant work occurring at the Property; and
  - (C) a scope of works necessary to rectify the source or sources of water ingress or other defects or non-compliant work occurring at the Property.

These instructions are included in a letter from Holding Redlich dated 3 September 2024 and included at Attachment A to this report.

## PROPERTY

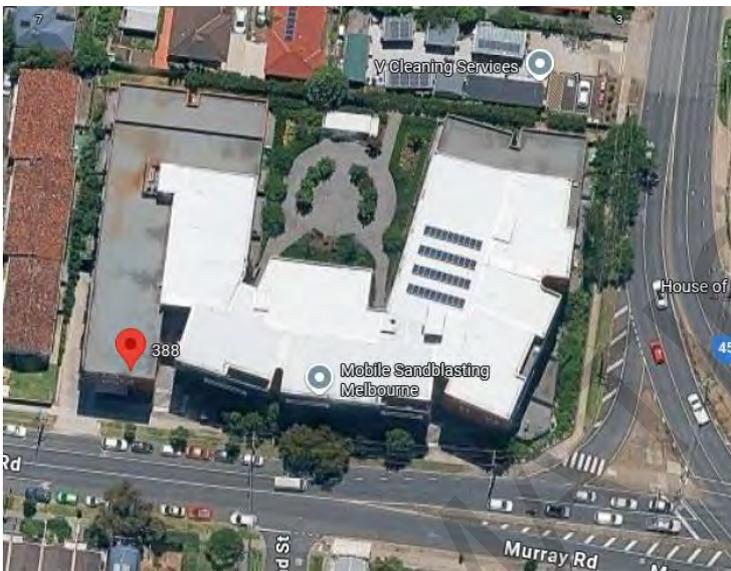
### The Property

The Apartment development is located at 388 Murray Road Preston.

The development consists of:

- (a) 133 Class 2 sole occupancy units
- (b) A basement carpark.

The main entrance of the development faces South.



## Plan of Subdivision

This report relates to Common Property 1 within the Plan of Subdivision PS 733538P which Subdivision states:

NOTATIONS
COMMON PROPERTY No.1 IS ALL THE LAND IN THE PLAN EXCEPT THE LAND IN LOTS 1-30, 101-130, 201-228, 301-326 AND 401-419 AND INCLUDES THE STRUCTURE OF WALLS, FLOORS AND CEILINGS WHICH DEFINE BOUNDARIES
LOTS ON THIS PLAN MAY BE AFFECTED BY ONE OR MORE OWNERS CORPORATIONS. SEE OWNERS CORPORATION SEARCH REPORT FOR DETAILS.
ALL INTERNAL COLUMNS, SERVICE DUCTS, PIPE SHAFTS & CABLE DUCTS, SERVICE INSTALLATIONS WITHIN THE BUILDING ARE DEEMED TO BE PART OF COMMON PROPERTY NO.1 THE POSITION OF THESE COLUMNS, SERVICE DUCTS, PIPE SHAFTS & CABLE DUCTS, SERVICE INSTALLATIONS HAVE NOT BEEN SHOWN ON THE DIAGRAM CONTAINED HEREIN
BOUNDARIES SHOWN BY THICK CONTINUOUS LINES ARE DEFINED BY BUILDINGS LOCATION OF BOUNDARIES DEFINED BY BUILDINGS:  INTERIOR FACE: ALL BOUNDARIES
* THE LOWER BOUNDARY OF E-2 IS 0.6M BELOW THE SITE. THE UPPER BOUNDARY OF E-2 IS 1.80M ABOVE THE SITE.

## The Buildings

There are 2 main entrances with foyers that face South onto Murray Road. Access to the basement carpark is from Murray Road.

The building is a 5 storey apartment complex, located over a shared basement, being a rise in 6.

The high-rise, high occupancy building requires the most fire-resistant level of construction, and the Type of construction is defined in Volume 1 of the Building Code of Australia as Type A.

## Inspection

I have completed visual inspections of Common Property 1 on 26 August 2021, 6 December 2024, and 9 May 2025.

I conducted my inspections on 26 August 2021 and 6 December 2024 by myself.

On 4 November 2024 I met with representatives of the Owners Corporation Committee (OCC).

I was accompanied by Mr Chris Drzewucki of Façade Engineering and a member of the OCC during my inspection on 9 May 2025.

The weather was fine and dry at all of these inspections.

## Building permit

The construction is pursuant to building permit no. BS-U1111/007055-4/VA issued by Mr Gary Dean of Philip Chun Building Code Consultants.

An occupancy permit, certificate number BS-U111/011574 dated 4 December 2015 was issued by Mr Gary Dean of Philip Chun Building Code Consultants.

## Report reference documents

- The Building Act – 1993 [the Act]
- The Building Regulations 2006 [the Regs]
- Building Code of Australia – Volume 1 - 2015 [BCA]  
\*This volume of the Building Code relates to Stage Permit 4 which is the 'Remainder of works' being the architectural completion of the building post structural works.

## Client

JWB and Associates Pty Ltd has been appointed by Ms. Jessica Xu of Holding Redlich on behalf of the Owners Corporation. [the **Owners**]

JWB and Associates has no previous personal or business relationship with the Owners of the property.

## DOCUMENTS

I have been provided with copies of the following documents.

Tab	Document
1	Building Permits for Stages 1 – 4 of Construction
2	Stamped architectural specifications
3	Stamped architectural drawings
4	Stamped structural drawings
5	Stamped fire engineering report
6	Occupancy Permit
7	Drew Rudd Engineers report dated 6 September 2021
8	Chadoak Plumbing report dated 18 June 2021
9	CMET Technology P/L report dated 11 May 2021

## BACKGROUND

I have been instructed of the following relevant background:

### Background

4. The Property is a six-storey residential complex with 133 apartments, associated common property and a common property basement car park.
5. The plan of subdivision for the Property is located at Tab 2 of your brief.
9. With respect to the construction of the Property:
  - (a) the planning permit was issued on 12 October 2010;
  - (b) the Property was built between October 2013 and December 2015 by Mr Chris Potiriadis and Mr Joseph Salvo and/or companies associated with Messrs Potiriadis and Salvo, being Jopsal Pty Ltd and CLP Electrics Pty Ltd (Builders). We understand that the Builders were engaged by the developer, Murray Rd Developments Pty Ltd, of which Messrs Potiriadis and Salvo were directors; and
  - (c) the other relevant persons involved in the build were:
    - (i) Gary Dean of Reddo Pty Ltd, engaged as the Building Surveyor;
    - (ii) CHT Architects Pty Ltd, engaged as the Architect; and
    - (iii) Garry Weir of Razzi Weir Group Unit Trust trading as RAW Fire Safety Engineering, engaged as the Fire Engineer.

## REPORT SUMMARY

Documented throughout this report are building defects, some are causing water ingress into private lots and common property at the building.

There is damage to the building from water ingress and a buildup of moisture.

There is white staining on the ceiling and floor around drain penetrations in the basement carpark which are formed from failed waterproofing of the terraces. These present as moisture laden salts otherwise known as efflorescence.

The initial emergence of a white substance from concrete products is referred to as efflorescence which is caused when soluble salts and other water dispersible materials come to the surface when moist conditions prevail.

Stormwater is entering the building from the following locations,

- Through poorly sealed and cracked external cladding.
- From external cladding sealed the base which prevents moisture behind the cladding from discharging away from the building. Moisture is directed back into and further down the building.
- Masonry wall/floor junctions which have not been properly flashed.
- From failed waterproof membranes on terraces and balconies.
- Failed water proofing within planter boxes.

Defective workmanship has caused water ingress into the building, and the consequential damage observed will continue to progress with time as the water ingress has not been halted.

Water ingress and build-up of moisture within the building is contrary to the BCA Performance Requirements of Part F1 of the BCA in relation to Damp and Weatherproofing:

## PART F1 DAMP AND WEATHERPROOFING

### OBJECTIVE

#### FO1

The **Objective** of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) **surface water**; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect **other property** from damage caused by redirected **surface water**.

### PERFORMANCE REQUIREMENTS

#### FP1.1

**Surface water**, resulting from a storm having an **average recurrence interval** of 20 years and which is collected or concentrated by a building or **sitework**, must be disposed of in a way that avoids the likelihood of damage or nuisance to any **other property**.

#### FP1.2

**Surface water**, resulting from a storm having an **average recurrence interval** of 100 years must not enter the building.

##### Limitation:

**FP1.2** does not apply to—

- (a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or
- (b) a garage, tool shed, **sanitary compartment**, or the like, forming part of a building used for other purposes; or
- (c) an **open spectator stand** or **open-deck carpark**.

#### FP1.3

A drainage system for the disposal of **surface water** must—

- (a) convey **surface water** to an appropriate **outfall**; and
- (b) avoid the entry of water into a building; and
- (c) avoid water damaging the building.

#### FP1.4

A roof and **external wall** (including openings around **windows** and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

## RESPONSE TO QUESTIONS RAISED IN BRIEF

I have previously prepared a building report dated 25 October 2021. Within that report are Items that are now being addressed by other consultants, these items are:

Item	Issue
1	Fire Separation
2	Structure
4	Front entry staircases – Footing failure
5	Roof and stormwater
6	Combustible cladding. *Note: Item 6 also included in this report as the cladding installation is defective.

The following items have been rectified.

Item	Issue
3	Sink Hole

The following items remain as recommended for further investigation by this office or other consultants.

Item	Issue
11	Condensation – Joint Common Property and Private Lot issue.
12	Mechanical Services
12	Access and Egress - Disability

## Questions raised in brief dated 3 September 2024

prepare a report which sets out your opinion on:

- (iii) the source or sources of the water ingress or other defects occurring at the Property; and
- (iv) having identified the source or sources of water ingress or other defects occurring at the Property following your further investigations:
  - (A) whether the construction of the Property complies with the Building Act, the Building Regulations, the Code and any relevant Australian Standards, with respect to the water ingress;
  - (B) the nature, extent and cause of any source or sources of water ingress or other defects or related non-compliant work occurring at the Property; and
  - (C) a scope of works necessary to rectify the source or sources of water ingress or other defects or non-compliant work occurring at the Property.

### Question:

- (iii) the source or sources of the water ingress or other defects occurring at the Property; and

### JWB and Associates response:

#### Item 1 – Open terrace and planter boxes

Water is entering the basement through the concrete slab forming the ceiling from the open terrace and planter boxes over.

My report dated 25 October 2021 states:

#### Issue

*There is water and efflorescence leeching into the basement carpark from the terrace and planter boxes over.*

*Water testing has revealed the planter boxes have failed.*

*There is extensive efflorescence in grout lines of the terrace, particularly around drain penetrations.*

*There are non-compliant movement control joints in the external tiling.*

## Observation

*The terraces have undersized drains, and the fall or gradient of the finished floor tiles is insufficient allowing water to pond on the balcony. This is exacerbated by the undersized drains servicing the large expanse of the main terrace.*

*The large expansive terrace and concrete slab substrate under does not have enough fall to the outlets. The drains are also significantly undersized which causes stormwater to pond on the surface of the tiling eventually saturating the grout, screed, and adhesive of the tiling system. Whilst I was unable to inspect the privately owned terrace at the Southeast corner of the building, it is likely the conditions are identical.*

*The saturation of the terrace substrate is causing excessive efflorescence to form in the grout lines across the terrace. Whilst a waterproof membrane is in place, the termination around the drains and drains within the planter boxes have failed causing salt laden moisture to leech into the basement carpark.*

*The terrace at the Southeast corner of the building is leeching the same salts down the facade of the building and into the basement carpark below.*

*Movement control (articulation joints) installed in the large internal terrace are not compliant with AS3958.1 – 2007 Guide to the installation of ceramic tiles, which is the industry accepted Standard for tiling in Victoria. All movement controls must not exceed 4.5m square in external environments.*

*Planter boxes allow moisture to egress at the base of the blockwork walls indicating the membrane is either not compliant or has failed. Consideration to a thicker more robust water proofing system needed to be considered by the builder due to the aggressive tree root systems planted at the property.*

*This is depicted in the photographs beginning over the page:*



*Photograph 47. General view of the common property terrace.*



*Photograph 48. The terrace is a large expanse of floor tiles which has very small drain outlets.*



*Photograph 49. The planter boxes have been poorly constructed allowing moisture to exit at the base of the wall.*



*Photograph 50. Efflorescence is evident throughout the terrace tiling, emanating from grout lines.*



*Photograph 51. There is a lack of fall to the outlets, which are undersized.*



*Photograph 52. Further view of the efflorescence emanating from the grout lines.*



*Photograph 53. There is efflorescence around drain penetrations, the drains are undersized, and the saturation of the screed and adhesive continues to keep the upper efflorescence wet.*



*Photograph 54. There are expansion joints in the tiling, however these exceed 4.5m in each direction.*

*The terraces and balconies are constructed almost flat with little to no fall to the undersized drains.*



*Photograph 55. Private lot terrace at the Southeast corner of the building, the terrace is leeching efflorescence down the façade of the building and into the basement below.*



*Photograph 56. Further view.*

#### Consequential damage

*The defective water proofing, particularly around drain penetrations in both the terraces and planter boxes is allowing salt laden moisture to leech into the basement. This is replicated at the privately owned lot at the Southeast corner of the building.*

The water leeching into the basement has not been halted and there has been attempts to control the damage to surfaces under these locations with the placement of stainless-steel trays, these trays do not provide a long-term solution to the failed membranes on the terrace and within planter boxes.

Efflorescence stains surfaces including permanently damaging the paint surface of vehicles.

An opinion from a structural engineer is required in relation to the long-term damage to steel reinforcement within the concrete from prolonged exposure to moisture.

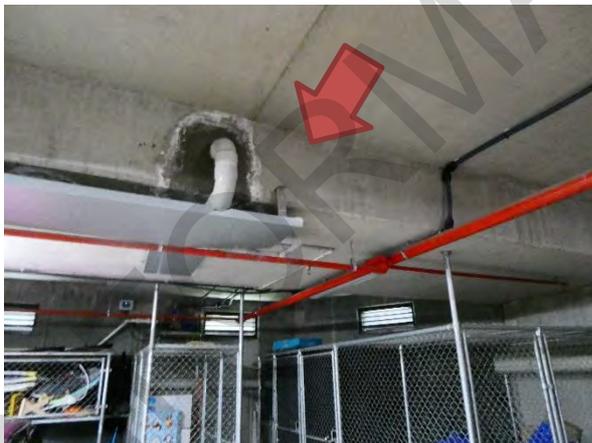
This is depicted in the following photographs:



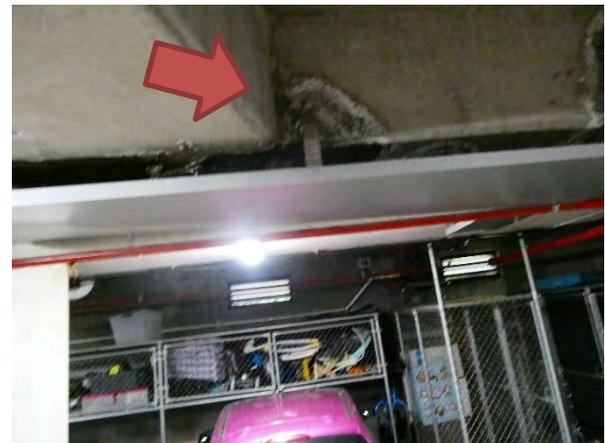
Photograph 57. Stainless steel drip trays installed to capture salt laden moisture entering the basement.



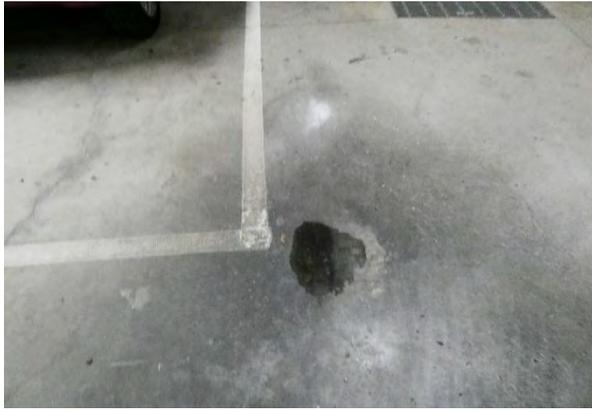
Photograph 58. Active water leaks into the basement continue, stainless steel trays are evident in locations under the terrace and planter boxes over.



Photograph 59. Active water leak into the basement. These salt laden salt stain surfaces.



Photograph 60. Further view.



*Photograph 61. Salt laden deposits on the floor of the basement. The salts stain surfaces permanently including vehicle paint.*



*Photograph 62. Cracks in the concrete infill slab have been filled with an epoxy sealant, these are most likely usual shrinkage cracks but should be commented on by a structural engineer.*

### Opinion

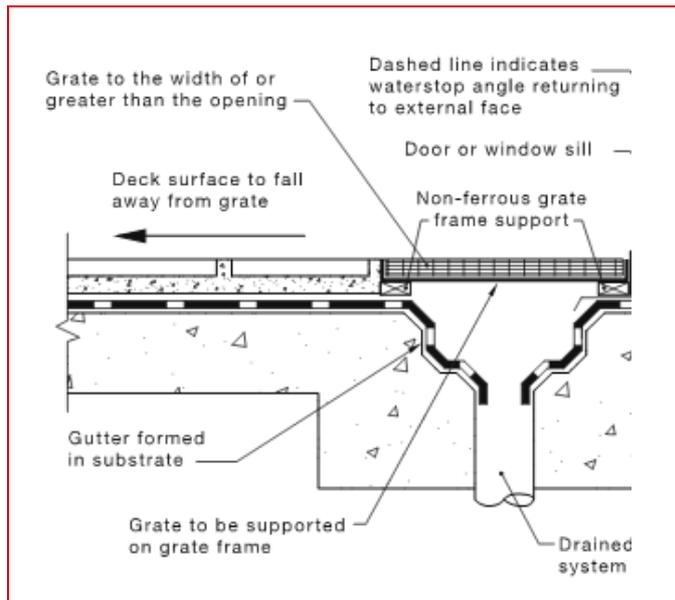
Please refer to the report of CMET Technology P/L dated 11 May 2021, I consider this report compliments that report, providing breaches of the Building Code and its deemed-to-satisfy provisions.

The builder was required to construct the external wet areas in accordance with the Building Code of Australia (BCA) and its referenced standard – AS4654.2 – 2012 – Waterproofing membranes for above ground use to ensure compliance with the deemed-to-satisfy Performance Requirements of the Code.

The terrace has not been constructed in accordance with the BCA or its referenced standard AS4654.2 - 2012 which requires all external terraces and decks to have a minimum 1 in 100 fall or gradient away from the building to appropriately sized drains. The expansive terrace in the middle of the property allows ponding of surface stormwater around undersized drains. This causes saturation of the screed/adhesive via the porous grout.

The drains do not have a waterproof membrane extending into the throat of drain to protect the penetration through the slab.

A compliant detail of the membrane termination into the drain is detailed over the page:



*Failure to construct a compliant fall allows moisture to pond under the tiling for prolonged periods as evidenced by the efflorescence in grout lines. The prolonged exposure to moisture has likely emulsified the waterproof membrane at the drain termination, allowing moisture to enter the basement below through the penetration in the slab.*

*An external tiled surface must have a fall or gradient of 1mm in 100mm as per AS3958.1:*

### **D1 GENERAL**

The primary consideration for falls in floor finishes is to ensure water does not remain on the finished floor in a manner that can adversely affect the health or amenity of the occupants or deteriorate building elements.

Falls in floor finishes should ensure water exits the area at the floor waste or doorway if that is the designed exit point (e.g. laundry door to exterior). Water should not pond on the floor, with the exception of residual water remaining due to surface tension.

### **D3 FALL RATIOS**

The recommended ratio of fall within a shower area is between 1:60 and 1:80.

The recommended ratio of fall in other wet areas is between 1:80 and 1:100.

In some circumstances the fall in the floor finishes in the same area may vary.

Where falls steeper than 1:100 are not achievable, the effectiveness of the floor drainage should be confirmed to ensure it meets the primary consideration set down in Paragraph D1 above.

*Clause 5.4.5 states:*

- (b) *Intermediate movement joints* Intermediate joints type (c), (d) or (e), as shown in Figure 5.1, should be inserted at intermediate positions to accommodate deflections of the base and movements in the flooring.

They should be provided in evenly spaced positions at approximately 4.5 m centres, or at locations where stress might reasonably be expected in—

- (i) internal floors, where any dimension exceeds 9 m or 6 m if subjected to sunlight; and
- (ii) external floors where any dimension exceeds 4.5 m.

On suspended floors, stress-relieving joints type (e), as shown in Figure 5.1, should be inserted where flexing is likely to occur (e.g., over supporting walls or beams).

*Australian Standard AS4654.2 – 2012, the deemed to satisfy requirement of the building code also states:*

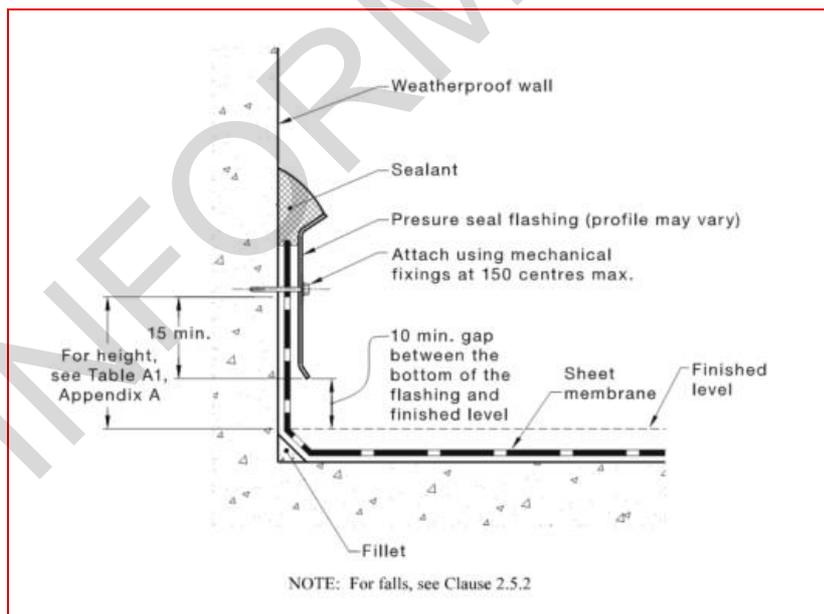
### 2.5.2 Falls

Falls in finishes shall ensure water drains to the drainage outlet. Water shall not be retained on the finished surface with the exception of residual water remaining due to surface tension.

The fall shall be in the structural substrate, or formed by a screed over the structural substrate.

NOTE: Falls for surface drainage should be no flatter than 1 in 100.

*The external wall of the building allows water into the building, and the planter boxes allow moisture to egress back onto floor tiling of the terrace. This is because a proper wall/floor membrane has not been constructed in accordance with AS4654.2:*



The planter box waterproof membranes have failed, both at the external wall junction with the floor and the drain penetration. The builder has planted trees such as Manchurian Pears that have very aggressive root systems. There has been no appropriate membrane installed to ensure the root system did not damage the membrane.

AS4654.2 – 2012 states:

## 2.2 PREVENTION OF DAMAGE

Where the waterproofing system is to come in contact with root systems of vegetation, it shall be root resistant.

Water ingress into the building is contrary to the Building Code of Australia (BCA) Performance Requirements at FP1.2, FP1.3 and FP1.4. The requirements of Part F1 of the BCA in relation to Damp and Weatherproofing as below:

**PART F1**      DAMP AND WEATHERPROOFING

**OBJECTIVE**

**FO1**

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

**PERFORMANCE REQUIREMENTS**

**FP1.1**

Surface water, resulting from a storm having an average recurrence interval of 20 years and which is collected or concentrated by a building or sitework, must be disposed of in a way that avoids the likelihood of damage or nuisance to any other property.

**FP1.2**

Surface water, resulting from a storm having an average recurrence interval of 100 years must not enter the building.

**Limitation:**

FP1.2 does not apply to—

- (a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or
- (b) a garage, tool shed, sanitary compartment, or the like, forming part of a building used for other purposes; or
- (c) an open spectator stand or open-deck carpark.

**FP1.3**

A drainage system for the disposal of surface water must—

- (a) convey surface water to an appropriate outfall; and
- (b) avoid the entry of water into a building; and
- (c) avoid water damaging the building.

**FP1.4**

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

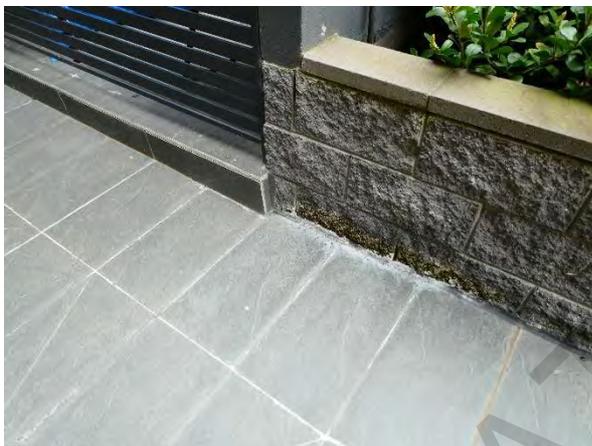
## **Base of blockwork walls.**

### Issue and Observations

*The base of blockwork has no flashing installed and/or a rebate that prevent lateral transfer of water into wall cavities or does not prevent moisture egressing the planter boxes.*

*Whilst this is a common property report only, I have been provided with a report prepared by Chadoak Plumbing which details water ingress into Apartment 22 from the poorly detail base of the blockwork walls. The plumbers completed water dye testing and confirmed the leak.*

*The same poor detail is evidenced in other locations around the building with water able to leech from planter boxes and the base of external walls.*



*Photograph 67. Damp blockwork from prolonged exposure to moisture.*



*Photograph 68. Moss at the base of the planter box block works and efflorescence in the tile grout lines indicate water egress from the planter box.*

### Opinion

*The blockwork/floor detail of both external cladding and planter boxes have not been constructed with a proper waterproof membrane or flashing to prevent lateral transfer of moisture both into sole occupancy units and egress from planter boxes.*

*Please refer to Item 7 of this report for the detail relating to departures from the Building Code of Australia causing the water damage.*

## Update: October 2025

There has been no recent works completed to the terrace or planter boxes to prevent water entering the basement through the ceiling.

Water continues to enter the basement and is captured by stainless steel drip trays.

The basement has been constructed as a 'wet basement.'

A wet basement is usually the description for a basement that has been constructed with weep holes in external walls which allow ground water to discharge into the basement, thereby reducing hydrostatic pressure behind the structural wall. The ground water is usually captured in a spoon drain and discharged via floor wastes into the legal point of discharge.

A wet basement does not mean that water should be emanating from ceilings and structural band and capping beams.

I initially raised this issue as in my experience steel reinforcement in concrete that is exposed to prolonged moisture can eventually cause a structural failure.

Mr Richard Drew, structural engineer has attended the building and prepared an expert report dated 28 November 2024. This report states:

3.3.1.4 Apart from potential damage to property and aesthetic concerns, long term the issue would be carbonation and deterioration of the concrete structure, which may become exhibited as "spalling" and corroded reinforcement<sup>6</sup> over time (10-20 years).

3.3.1.5 The issue of leakage through slabs is typically addressed by the installation of drip trays with associated suspended drainage. Over time such systems require maintenance to remain effective, and may only have a life of 10 to 15 years due to corrosion or accumulation of salts in the drainage system.

3.3.1.6 Reliance therefore on drip trays is not a long term solution, does not address long term structural damage, and it is typically subject to intermittent failure.

3.3.1.7 Water penetration and leakage issues should be resolved by replacement of membranes to planters and external surfaces with a specific water-proofing system appropriate to the application<sup>7</sup>.

## Item 1 continued

### Questions:

- (iv) having identified the source or sources of water ingress or other defects occurring at the Property following your further investigations:
- (A) whether the construction of the Property complies with the Building Act, the Building Regulations, the Code and any relevant Australian Standards, with respect to the water ingress;
  - (B) the nature, extent and cause of any source or sources of water ingress or other defects or related non-compliant work occurring at the Property; and
  - (C) a scope of works necessary to rectify the source or sources of water ingress or other defects or non-compliant work occurring at the Property.

### JWB and Associates response:

(A)

The construction of the terrace and planter boxes do not comply with the deemed to satisfy requirements in the Building Code of Australia contain in Australian Standard As4654.2 – 2012. These departures have been set out previously within this report.

The departures from AS4654.2 is allowing surface water to enter the basement of the building. Water ingress into the building is contrary to the Building Code of Australia (BCA) Performance Requirements of Part F1 of the BCA in relation to Damp and Weatherproofing as below:

**PART F1**      DAMP AND WEATHERPROOFING

**OBJECTIVE**

**FO1**  
The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

**PERFORMANCE REQUIREMENTS**

**FP1.1**  
Surface water, resulting from a storm having an average recurrence interval of 20 years and which is collected or concentrated by a building or sitework, must be disposed of in a way that avoids the likelihood of damage or nuisance to any other property.

**FP1.4**  
A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

(B)

Mr Drew's structural report includes a report prepared by Mr Robin May of CMET Technologies P/L dated 11 May 2021.

Mr May conducted extensive forensic investigations including removing floor tiles, excavating planter boxes and conducted water testing.

The results are summarised in Mr May's report.

Mr Drew states in his report at paragraph 3.3.1.7 that a new membrane system is to be installed to the open terrace and planter boxes.

I agree with the scope of works.

(C)

As per the recommendations of the structural engineer.

Remove all floor tiles from the open terrace, clean and prime the substrate and install a fit for purpose membrane and replace the floor tiles.

Planter boxes are to be constructed with a full membrane system to 100mm above the finished soil level and an overflow/clean out drain installed in accordance with AS4654.2 - 2012.

**Question:**

(iii) the source or sources of the water ingress or other defects occurring at the Property;  
and

**JWB and Associates response:**

**Item 2 – Lightweight external cladding**

Lightweight external cladding is allowing water to enter the building.

My report dated 25 October 2021 states:

Issues

*The Building Code of Australia (BCA) does not include a deemed-to-satisfy (DtS) cladding in relation to weather proofing of a Class 2 building.*

*All cladding for a Class 2, multi-story building is required to be assessed as an Alternate (Performance) Solution by the relevant building surveyor prior to the issuing of a building permit.*

*Alternate Solutions provide direction to a builder in relation to installing cladding in accordance with the manufacturers installation or design manuals. The relevant building surveyor is required to assess and approve the cladding systems as compliant when issuing the building permit.*

*The following lightweight cladding has been installed at the building:*

- *Cement sheet which has been rendered.*

*This lightweight cladding has not been installed in accordance with the manufactures installation or design manuals.*

*The building permit file would need to be procured to allow investigation of an Alternate Solution, approved by the relevant building surveyor.*

Observations

**Important note:** *After reviewing the plan of subdivision, I consider the external wall cladding will be common property, this should be confirmed by a legal practitioner.*

*Please refer to Item 1 of this report in relation to the construction of the wall for compliance with the fire resistance level (FRL) in accordance with the Building Code of Australia.*

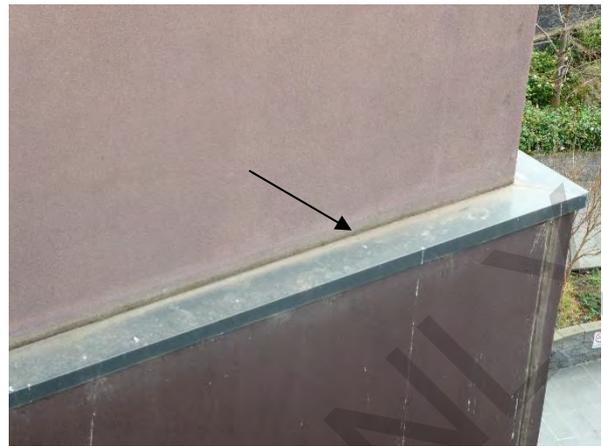
*The cement sheet has not been constructed in accordance with the manufacturers installation manual as the sheets are sealed at the base and have poorly installed fixings.*

*The render coat has become badly faded and is opening up allowing moisture behind the cladding and into the wall cavity.*

Photographs depicting the differing cladding is provided below:



Photograph 37. General view of the lightweight cement sheet external cladding.



Photograph 38. All the lightweight cement sheet has been sealed at the base.



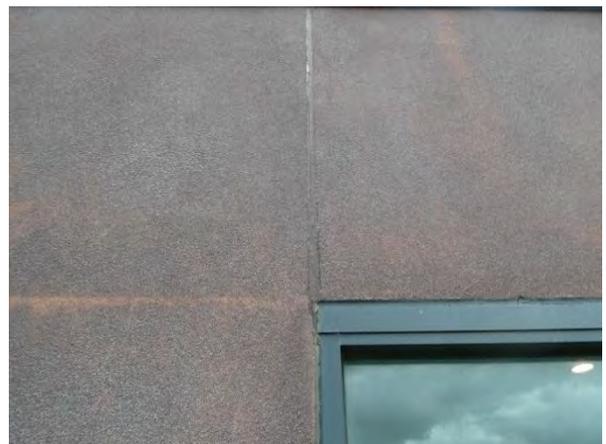
Photograph 39. Further view of the cement sheet sealed at the base.



Photograph 40. Joints in the sheet can be seen through the thin render coat and the sheets have been installed horizontally.



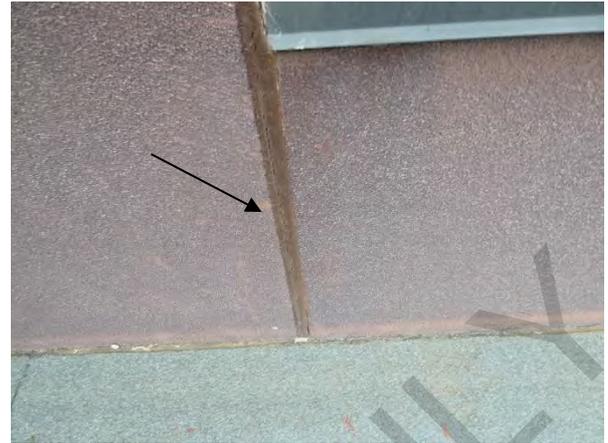
Photograph 41. Cement sheet cladding has been sealed at the base of terraces and balconies.



Photograph 42. Articulation joint has split open allowing moisture into the wall cavity which has been sealed at the base. Horizontal joint in the sheet also visible.



Photograph 43. Articulation joint has split open, and cracks have developed in the render coat. This allows moisture into the wall cavity where it is sealed at the base.



Photograph 44. Closer view, sealant split open, material sealed at the base.



Photograph 45. Poorly installed fixings are delaminating from the material which may evidence a lack of fire rating behind the cladding.



Photograph 46. Fixing has popped from the cladding taking the thin render coat with it.

## Opinion

There is no deemed-to-satisfy (DtS) cladding listed in the Building Code of Australia (BCA) as detailed in Part F1, see below an extract from the Building Code:

**PART F1**      **DAMP AND WEATHERPROOFING**

*Deemed-to-Satisfy Provisions*

**F1.0 Deemed-to-Satisfy Provisions**

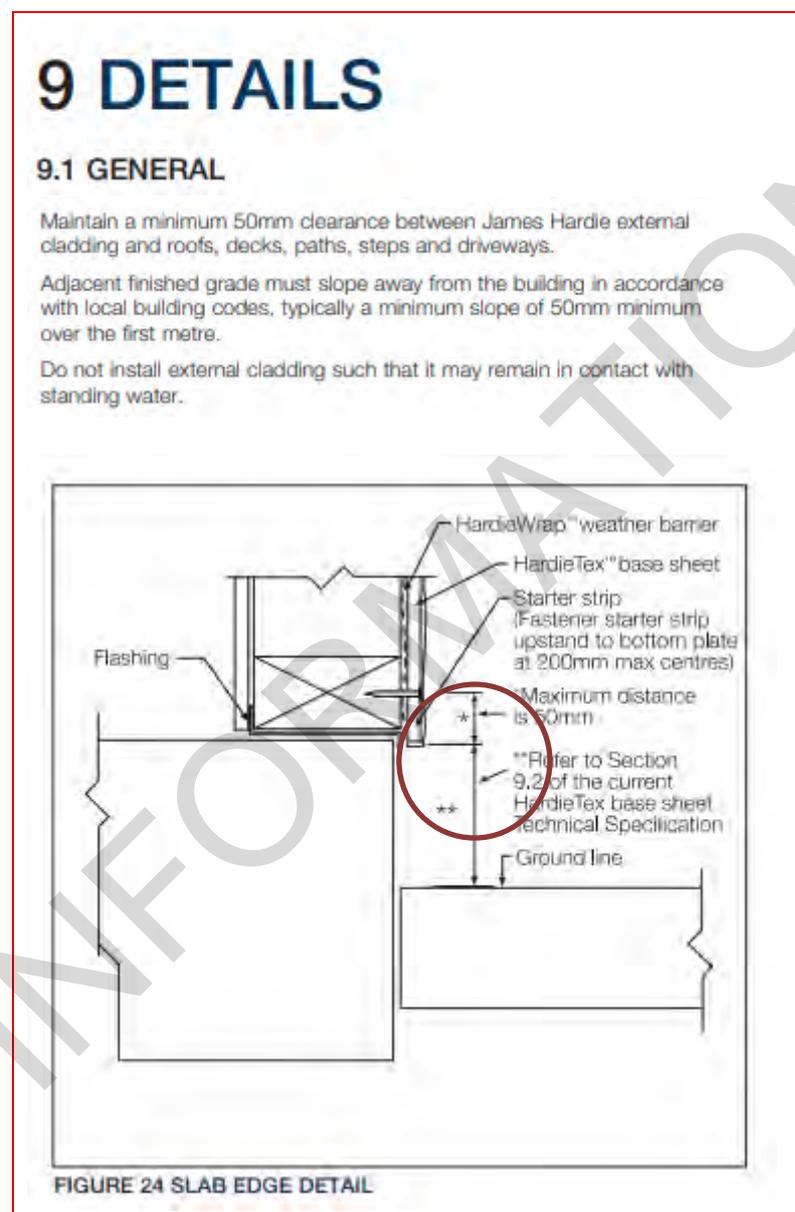
(a) [Performance Requirement FP1.4](#), for the prevention of the penetration of water through [external walls](#), must be complied with.

There are no [Deemed-to-Satisfy Provisions](#) for this [Performance Requirement](#) in respect of [external walls](#).

A check of the building permit needs to be completed to identify if an alternate solution was approved by the relevant building surveyor (RBS). All alternate solutions are required to be listed in the building permit in accordance with the Building Act 1993. The relevance of this is an alternate solution is a technical document which includes the manufacturers installation instructions, this allows the builder to build in accordance with these instructions and further, allows the RBS to check the installation for compliance.

The James Hardie cement sheet installation guide directs that the base of all cladding must finish above surfaces below (such as finished floor tiles of terraces, balconies, and roof flashings) and must include a wall flashing to allow any moisture within the cavity to discharge away from the building.

Extracts from the installation manual provided below and over the page:



*Horizontally installing sheets is not recommended by the manufacturer as these joins can open up and allow moisture directly into the wall cavity.*

### **3.1 GENERAL INSTALLATION**

Planning sheet layout is an essential part of installation to minimise the number of sheet joints and material wastage. The two main areas to be considered are sheet orientation and jointing.

In all cases use full sheets and do not use offcuts to clad walls.

See Figure 9.

Sheets must be fixed vertically, commencing from a corner. Where steel framing is used, ensure studs are placed so sheets can be progressively fixed in the sequence indicated in Figure 6.

### **3.2 ORIENTATION**

#### **3.2.1 Vertical**

Vertical sheet installation layout is recommended for the following reasons:

- The longer sides of the sheets are recessed, facilitating vertical sheet joints, horizontally laid sheet sheets could require significant site grinding.
- Noggings can be staggered rather than in line.
- Vertical sheet installation minimises wastage as sheet lengths and widths suit wall heights and stud spacing.
- After coating, vertical joints are generally less obvious in glancing light conditions than horizontal joints.

#### **3.2.2 Horizontal**

Horizontal sheet layout is only recommended where the maximum depth of cladding is 1200mm (one sheet width), horizontal sheet installation is more suitable for applications such as fascias.

When fixing sheets horizontally. Refer to Table 2 for fastener spacings. Ensure sheets are fastened to all studs.

*The design manual also directs that window and sliding door heads (or tops) must be flashed and a gap left between the cement sheet and the aluminum frame surrounds that is filled with elastomeric sealant to ensure building movement does not open the joint thereby allowing moisture into the wall cavity.*

*Sealing the cladding at the base of the walls and to the heads of window and sliding door frames prevents any moisture within the wall cavity from discharging away from the building, instead water is directed back into the building which is causing water damage to perishable building elements within the building.*

*Water ingress and build-up of moisture within the building is contrary to the BCA Performance Requirements of Part F1 of the BCA – Volume 1 - Damp and Weatherproofing:*

## PART F1 DAMP AND WEATHERPROOFING

### OBJECTIVE

#### FO1

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

### PERFORMANCE REQUIREMENTS

#### FP1.1

Surface water, resulting from a storm having an average recurrence interval of 20 years and which is collected or concentrated by a building or sitework, must be disposed of in a way that avoids the likelihood of damage or nuisance to any other property.

#### FP1.2

Surface water, resulting from a storm having an average recurrence interval of 100 years must not enter the building.

#### Limitation:

FP1.2 does not apply to—

- (a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or
- (b) a garage, tool shed, sanitary compartment, or the like, forming part of a building used for other purposes; or
- (c) an open spectator stand or open-deck carpark.

#### FP1.3

A drainage system for the disposal of surface water must—

- (a) convey surface water to an appropriate outfall; and
- (b) avoid the entry of water into a building; and
- (c) avoid water damaging the building.

#### FP1.4

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

*Extensive rectification of lightweight cladding is required.*

*From my experience the Owners Corporation Committee will need to consider the following prior to cladding replacement:*

- *Removal of cladding will facilitate the removal of roof and stormwater items such as rain heads, downpipes, flashing's, and capping's.*

*This provides an opportunity to rectify all defective works with at least these items of the roof and stormwater.*

- *Rotted timber framing is a possibility. Identification of all damaged framing members that will need to be replaced cannot be quantified unless a full destructive investigation is completed at the building, which is not practical.*

*For this reason, there could be requests for variations to the cost of work to replace cladding (in isolation) from a rectification builder if the contract does not address this issue.*

- *In any proposed cladding removal contract, I recommend a lawyer be engaged to work with the property manager and owners corporation to ensure the contract accurately reflects the works being completed.*
- *I recommend the OC committee considers engaging the services of a Superintendent or independent building consultant to conduct regular checks of any rectification works being completed by the builder to ensure works are completed in accordance with the building permit, the manufacturers recommendations and to a workmanlike standard.*

#### **Update: October 2025**

There is no Alternate Solution listed in the building permit.

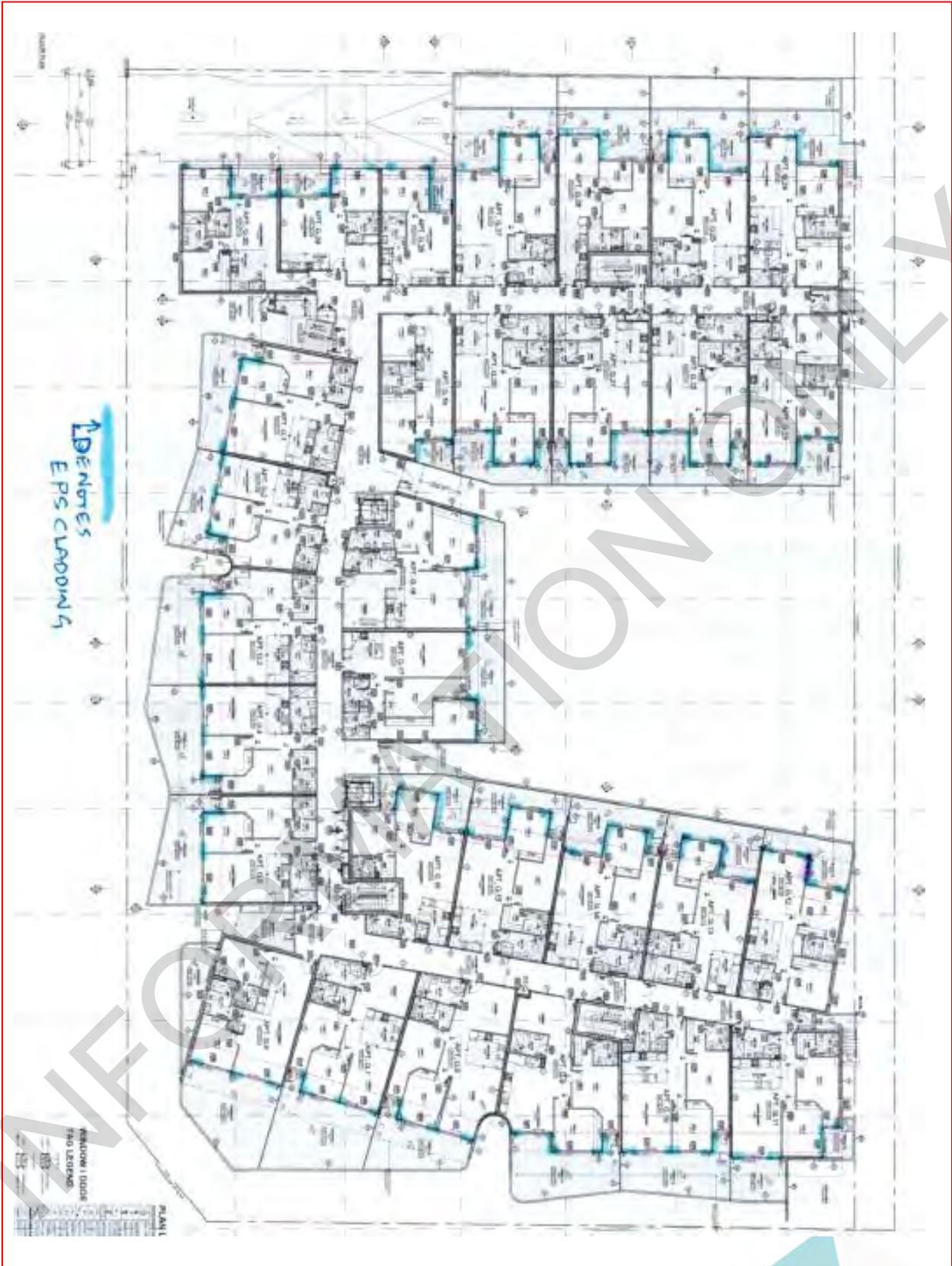
I reinspected the property on 9 May 2025 and was provided access to the following apartments:

G5, G13, G17, G22, G25, 122, 127, 226, 305, 306, 308, 311, 321 and 415.

The ground floor apartments above have previously reported water ingress into the building at the base of external walls. The external walls have been constructed with expanded polystyrene foam (EPS) lightweight cladding which is render coated and sealed behind skirting tiles.

As described in my earlier report the sealing of the base of lightweight cladding behind skirting tiles directs any moisture in the wall cavity, from cracks in render, gaps around window frames or internal moisture buildup to be directed back into the building causing damage to perishable building elements.

The locations of EPS cladding installed on apartments on the ground floor are depicted in a marked plan over the page:



My inspections of the apartments on 9 May 2025 identified all rendered lightweight cladding installed at the property is sealed behind skirting tiles.

Further there are large cracks and openings in the rendered rain shield that has allowed water to enter the apartments. It appears temporary measures have been completed to seal the rendered cladding, though the repairs are poor and can only be described as temporary.

This is depicted in the following photographs:



Photograph 1. Apartment G13. The occupant reported previous water ingress.



Photograph 2. The EPS foam cladding is sealed at the base.



Photograph 3. I understand from the occupant a representative of the builder attended the property and 'patched' the cracks in the render applied to the EPS foam cladding.



Photograph 4. The rectification appears to be temporary as it is a poor finish and does not match the render color.



Photograph 5. Apartment 3.8.



Photograph 6. The EPS foam cladding is sealed at the base.



Photograph 7. Apartment 1.24.



Photograph 8. Cracked render coat, external cladding is sealed behind skirting tiles.



Photograph 9. I inspected apartment G17. The occupant had previously reported waster ingress at the base of North facing external walls.



Photograph 10. Poorly patched external cladding.



Photograph 11. Poorly patched external cladding under the window.



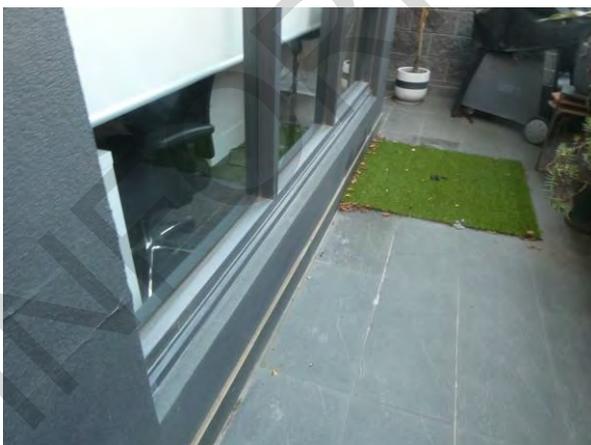
Photograph 12. Poorly patched external cladding above the sliding doors.



Photograph 13. Apartment G22. The occupant had previously reported waster ingress at the base of East facing external walls.



Photograph 14. There is cracked and damaged render coat over EPS foam cladding.



Photograph 15. I understand from the owner of the property that a representative of the builder returned and replaced floor tiles.



Photograph 16. Further view.

## Item 2 continued

### Questions:

- (iv) having identified the source or sources of water ingress or other defects occurring at the Property following your further investigations:
  - (A) whether the construction of the Property complies with the Building Act, the Building Regulations, the Code and any relevant Australian Standards, with respect to the water ingress;
  - (B) the nature, extent and cause of any source or sources of water ingress or other defects or related non-compliant work occurring at the Property; and
  - (C) a scope of works necessary to rectify the source or sources of water ingress or other defects or non-compliant work occurring at the Property.

### JWB and Associates response:

(A)

The expanded polystyrene cladding (EPS) is a substituted material in that the architectural design drawings does not include the material, and it was not approved for use in the building permit. Further, it is likely the material is combustible, and I understand this is being addressed by others.

The architectural drawings do not illustrate any lightweight cladding being separated from finished surfaces under in accordance with all manufacturers of lightweight cladding. The design drawings do not provide any detail in relation to the system to be used to install the lightweight cladding. Due to the lack of detail in the design drawings, the relevant building surveyor should have requested an alternate solution at the time the application for a building permit was made.

The alternate solution could have been the manufacturer installation material for the proposed cladding to be installed around the building.

All installation manuals for lightweight cement sheet and EPS cladding require the material to be free of surfaces under and flashed to allow the moisture behind the cladding to be discharged away from the building. This has not been completed at the building.

The sealing of the lightweight cladding behind the skirting tiles and cracks that have formed in the render coat and around windows has allowed water to enter the building.

Water ingress and build-up of moisture within the building is contrary to the BCA Performance Requirements of Part F1 of the BCA – Volume 1 - Damp and Weatherproofing:

## PART F1 DAMP AND WEATHERPROOFING

### OBJECTIVE

#### FO1

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

#### FP1.4

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

(B)

Water ingress into the building is from the sealing of lightweight cladding behind skirting tiles, thereby directing water in the wall cavity of the building back into Private Lots.

All lightweight cladding, being the cement sheet and the EPS foam is sealed at the base.

(C)

The cement sheet lightweight cladding is to be removed and installed so that the sheets are vertical and fixed in accordance with the manufacturers recommendations. The base of the cement sheet is to be free of surfaces under to allow water to discharge away from the building in accordance with the manufacturers recommendations.

All EPS cladding may need to be removed due to combustibility. This is being reviewed by others.

If it is to be retained, the base of the material is to be re-worked to removed skirting tiles and to ensure water in the wall cavity can discharge away from the building.

**Question:**

(iii) the source or sources of the water ingress or other defects occurring at the Property;  
and

**JWB and Associates response:**

**Item 3 – Water ingress from precast external cladding around the roof top terrace.**

A concrete precast panel that forms the West facing external wall of the building has developed a large crack that allows water to enter apartment 3.21 at the head of the West facing window in the living room.

The roof top terrace ponds with stormwater.



Photograph 17. The roof top terrace ponds with stormwater.



Photograph 18. Further view.



Photograph 19. The cracks in the precast concrete panel have been filled with an unknown material.



Photograph 20. Large crack in the precast panel has been sealed by smearing sealant into the joint.



Photograph 21. Closer view.



Photograph 22. Stormwater ponds around drains on the roof top terrace.

It is unusual for precast concrete panels to develop large cracks that cause water entry into a building. This should be investigated by a structural engineer.

Ponding stormwater on roof top terraces is caused by a lack of a consistent fall or gradient in the finished surface which subjects the waterproofing membrane to continuous hydrostatic pressure, a load that the membrane is not designed to withstand indefinitely.

The constant pressure accelerates material degradation, exploits microscopic imperfections, and significantly reduces the systems operational lifespan.

Technical Consequences of ponding:

- **Accelerated Membrane Deterioration:** Prolonged water exposure can lead to material delamination and increased vulnerability to UV radiation and thermal cycling.
- **Substrate Saturation:** Water can bypass the membrane at laps or penetrations, leading to concrete spalling, reinforcement corrosion, or saturation of insulation materials.
- **Performance Failure:** The risk of water ingress into the building's interior increases exponentially, leading to significant consequential damage and operational disruption.

### Item 3 continued

#### Questions:

- (iv) having identified the source or sources of water ingress or other defects occurring at the Property following your further investigations:
  - (A) whether the construction of the Property complies with the Building Act, the Building Regulations, the Code and any relevant Australian Standards, with respect to the water ingress;
  - (B) the nature, extent and cause of any source or sources of water ingress or other defects or related non-compliant work occurring at the Property; and
  - (C) a scope of works necessary to rectify the source or sources of water ingress or other defects or non-compliant work occurring at the Property.

#### JWB and Associates response:

(A)

Surface water has entered the building over a prolonged period from a large crack in the precast external wall panel on the West elevation of the building.

Temporary repairs may have been successful, but monitoring is required.

Water ingress and build-up of moisture within the building is contrary to the BCA Performance Requirements of Part F1 of the BCA – Volume 1 - Damp and Weatherproofing:

## PART F1 DAMP AND WEATHERPROOFING

### OBJECTIVE

#### FO1

The Objective of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) surface water; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect other property from damage caused by redirected surface water.

#### FP1.4

A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

(B)

The water ingress into apartment 3.21 is isolated to the crack in the precast wall panel above the apartment. Temporary repairs may have halted the ingress, monitoring is required.

A structural engineer is to be engaged to investigate the causation of the crack.

The West elevation roof top terrace ponds with surface water in two large sections. These are at the Northwest corner and the Northeast corner of the North facing part of the roof.

(C)

A structural engineer is to be engaged to assess the causation of the large crack that has formed in the precast panel and to ensure the panel cannot delaminate from the building.

The large sections where surface water ponds on the surface of the roof top terrace are to have the waterproof membrane removed, the grade rectified, and a new membrane installed. It is likely that most of the North facing part of the roof will need to be removed and the membrane joined near the hot water units.

**Question:**

(iii) the source or sources of the water ingress or other defects occurring at the Property;  
and

**JWB and Associates response:**

**Item 4 – Rear entry stairs**

The terrace or landing at the top of the rear entry steps have been constructed flat which allows wind driven surface stormwater to surge under the front door and into the building.

My report dated 25 October 2021 states:

*Issue and Observations*

*The North elevation entry stairs have the following defects:*

- *The footing supporting the stair and entry appears to be 'sinking' or settling.*
- *The terrace has been constructed flat with no fall away from the building. This allows water to pond on the floor tiles causing efflorescence.*
- *The failure to construct a compliant hob/freeboard is allowing stormwater to enter the building.*



*Photograph 63. North entry stairs to the building. There is water emanating from under the tiling and leeching down the wall.*



*Photograph 64. Entry stairs, tactile markers require replacement.*



Photograph 65. Entry to the building, there is no fall on the tiling away from the building and prolonged exposure to moisture has caused efflorescence to form in the grout joints.



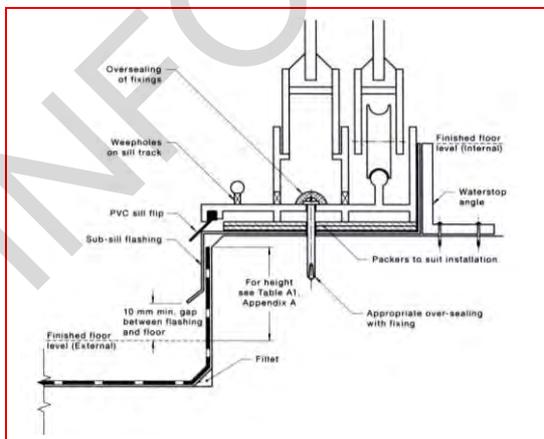
Photograph 66. Stormwater ponds at the entry door due to a lack of fall in the floor tiling. The water was observed entering the building under the door. There is an insufficient hob or freeboard under the entry door.

### Opinion

*Australian Standard AS4654.2 – 2012 Waterproof membranes for above ground use direct that all tiled surfaces of terrace, balconies and landings are to a fall or gradient away from the building to allow stormwater to shed away from the building.*

*There is no fall on the landing, therefore stormwater is permitted to pond on the surface causing the grout, adhesive, and screed to be saturated with stormwater. The prolonged exposure to moisture has caused efflorescence to form in the grout lines and water can be seen leeching down the face of the bluestone wall forming the stairs.*

*A compliant hob/freeboard has not been formed under the door entry to prevent stormwater entering the building. A diagram of a compliant door hob/freeboard from AS4654.2 has been provided below.*



*Water entry into the building was observed. Efflorescence, which is a building defect as detailed in the Victorian Building Authority's Guide to Standards and Tolerances, is evident throughout the entry floor tiling.*

*The floor tiles are to be removed and replaced, a compliant hob/freeboard to be constructed and an appropriate waterproof membrane installed.*

*Water ingress into the building is contrary to the Building Code of Australia (BCA) Performance Requirements at FP1.2, FP1.3 and FP1.4. The requirements of Part F1 of the BCA in relation to Damp and Weatherproofing*

#### Item 4 continued

#### Questions:

- (iv) having identified the source or sources of water ingress or other defects occurring at the Property following your further investigations:
  - (A) whether the construction of the Property complies with the Building Act, the Building Regulations, the Code and any relevant Australian Standards, with respect to the water ingress;
  - (B) the nature, extent and cause of any source or sources of water ingress or other defects or related non-compliant work occurring at the Property; and
  - (C) a scope of works necessary to rectify the source or sources of water ingress or other defects or non-compliant work occurring at the Property.

#### JWB and Associates response:

(A)

There has been no further work completed on the external landing.

The deemed to satisfy requirements of the Building Code of Australia are contained in Australian Standard AS4654.2 – 2012 *Waterproof membranes for above ground use*. This Standard directs that all tiled surfaces of terrace, balconies and landings are to a fall or gradient away from the building to allow stormwater to discharge away from the building and to prevent ponding that can cause a person to slip and fall.

There is no fall or gradient on the landing, therefore stormwater is permitted to pond on the surface causing the grout, adhesive, and screed to be saturated with stormwater. The prolonged exposure to moisture has caused efflorescence to form in the grout lines and water can be seen leeching down the face of the stone wall forming the stairs.

A compliant hob/freeboard has not been formed under the door entry to prevent stormwater entering the building. A diagram of a compliant door hob/freeboard from AS4654.2 has been provided below.

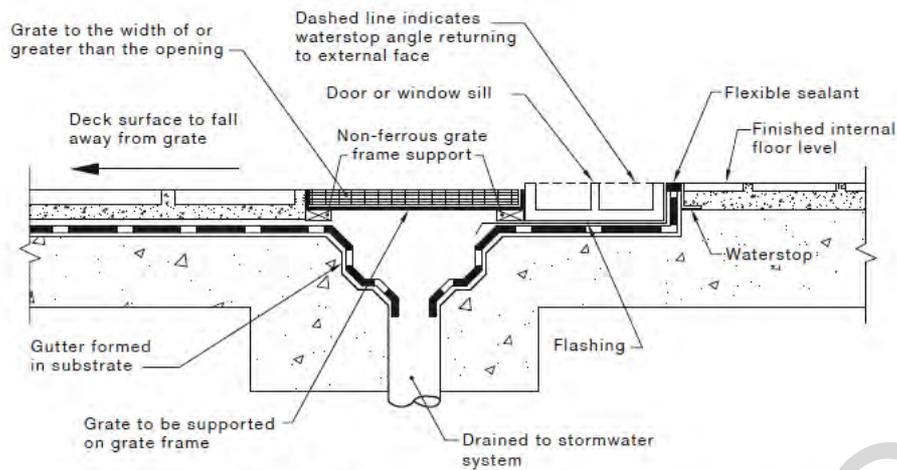


FIGURE 2.9 TYPICAL DETAILS OF MEMBRANE TERMINATION AT WALL OPENINGS WHERE THE INTERNAL AND EXTERNAL FINISHED FLOOR LEVELS DO NOT ALLOW FOR AN UPTURN

Water ingress and build-up of moisture within the building is contrary to the BCA Performance Requirements of Part F1 of the BCA – Volume 1 - Damp and Weatherproofing:

## PART F1 DAMP AND WEATHERPROOFING

### OBJECTIVE

#### FO1

The **Objective** of this Part is to—

- (a) safeguard occupants from illness or injury and protect the building from damage caused by—
  - (i) **surface water**; and
  - (ii) external moisture entering a building; and
  - (iii) the accumulation of internal moisture in a building; and
- (b) protect **other property** from damage caused by redirected **surface water**.

#### FP1.4

A roof and **external wall** (including openings around **windows** and doors) must prevent the penetration of water that could cause—

- (a) unhealthy or dangerous conditions, or loss of amenity for occupants; and
- (b) undue dampness or deterioration of building elements.

(B)

Water ingress into the building stated at this item is limited to the rear North facing exit on the ground floor of the building, which includes the landing and the external staircase.

I have previously reported the staircase footings appear to have 'settled' or sunk.

The causation of this is to be investigated by a structural engineer.

(C)

Rectification of the footings, if required, is to be completed in accordance with the requirements of the structural engineer.

Rectification of the water ingress requires all of the floor tiles to be removed, a strip drain installed across the door entry, a waterproof membrane installed over the substrate which extends under the door threshold and up the door sill to the height of the finished floor tiles, and the finished floor tiles graded to fall away from the entry door.

The work is to be completed in accordance with the Building Code of Australia deemed to satisfy requirements contained in AS4654.2- 2012 – *Waterproofing membranes for external above-ground use. Part 2: Design and installation.*

**Question:**

(iii) the source or sources of the water ingress or other defects occurring at the Property;  
and

**JWB and Associates response:**

**Item 5 – Window and door frames, and glazed balustrades/privacy screens.**

I was advised by the owner of apartment 3.21 that the North facing awning window in bedroom 2 did not close properly and allowed stormwater to enter the building.

I am aware of glazing forming privacy screens had been reported as breaking without any known impact.

I considered it prudent that a façade engineer be engaged to ensure the windows, sliding doors, balustrades and privacy screens that are installed throughout the property are fit for purpose and comply with the Building Code of Australia as the building is a rise in 5 and is exposed to elevated raking forces.

The owners corporation subsequently engaged Façade Engineering to conduct an inspection of various private lots and common property at the building, I was present for the inspections.

Mr Chris Drzewucki of Façade Engineering has prepared a report providing his opinions in relation to the windows, doors, and balustrades/privacy screens at the development.

## Other minor items

The following is a list of minor items reported on in my original report dated 25 October 2021 which have not been addressed.

### Hot water service screens

The screens protecting the hot water services have been damaged by the heat emitted from the units. The screens are corroding and staining adjacent surfaces, I do not consider these to be fit for purpose and should be replaced.



Photograph 73. Heat damaged screens.

### October 2025



Murray Road footpath

Post construction, the footpath was not reinstated in a proper and workmanlike manner.

In my opinion, the builder was obligated to return Council property back to the condition it was in prior to construction.



Photograph 74. Damaged concrete footpath remains post construction.

INFORMATION ONLY

## STATEMENT IN ACCORDANCE WITH FORM 44A, EXPERT WITNESS CODE OF CONDUCT

In contemplation that this report will be presented to a Court in the State of Victoria, I state that:

- 1 I have read rules 44.01 and 44.03 and understand my obligations to the court and agree to be bound by the expert witness code of conduct.
- 2 The details of my address, qualifications and experience are set out in the Curriculum Vitae included as Attachment 'C' of this report.
- 3 My instructions are set out earlier in this report.
- 4 This report has been prepared based on a visual inspection of the works. I have not removed any fixtures or material, conducted, or caused to be conducted any tests or experiments upon which I rely in making this report.
- 5 I have not further summarized the opinions expressed in this report as my comments and observations on each item are considered sufficiently brief.
- 6 Other than stated within this report, there are no issues or questions falling outside my expertise and the report is complete and accurate.
- 7 I have made all the inquiries that I believe are desirable and appropriate and no matters of significance, which I regard as relevant have to my knowledge been withheld from the Court.

I have made all the inquiries that I believe are necessary and appropriate at the time of authoring this report and no matters of significance, which I regard as relevant, have to my knowledge been withheld from the tribunal.

**INSERT SIGNATURE**

Building Report prepared by Jeff Beck *MASBC MAIBS*  
Registered Building Practitioner  
Principal  
JWB and Associates P/L

# ATTACHMENT A

## Instructions

3 September 2024

Jeff Beck  
JWB & Associates Pty Ltd  
PO Box 131  
FOREST HILL VICTORIA 3131

Lawyer Jessica Xu  
Direct Line (03) 9321 9933  
Email [jessica.xu@holdingredlich.com](mailto:jessica.xu@holdingredlich.com)  
Partner Lachlan Ingram  
Our Ref JFX 19480961

By email [jeffbeck@tpg.com.au](mailto:jeffbeck@tpg.com.au)

*Confidential and subject to legal professional privilege*

Dear Mr Beck

Owners Corporation 1 on PS 733538P  
388 Murray Road, Preston  
Retainer of Jeff Beck

1. We act for Owners Corporation 1 on Plan of Subdivision 733538P (Owners Corporation), being the owners corporation for 388 Murray Road, Preston (Property).
2. We refer to:
  - (a) your initial brief through the Owners Corporation with respect to the building defects at the Property; and
  - (b) the building report prepared by you dated 10 September 2021 (Building Report).
3. We are instructed by the Owners Corporation to retain you as an independent expert to conduct additional water testing, as contemplated in the Building Report, and to prepare a supplementary report on the results of same. This report may be used as evidence in legal proceedings.

#### Background

4. The Property is a six-storey residential complex with 133 apartments, associated common property and a common property basement car park.
5. The plan of subdivision for the Property is located at Tab 2 of your brief.
6. Copies of the following documents relating to the construction of the Property are located at Tab 3 of your brief:
  - (a) building permits for stages 1-4 of construction (Building Permits);
  - (b) stamped architectural specifications;
  - (c) stamped architectural drawings;

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Level 23 500 Bourke Street Melbourne VIC 3000  
GPO Box 2154 Melbourne VIC 3001 T + 61 3 9321 9999 [www.holdingredlich.com](http://www.holdingredlich.com)  
ABN 15 364 527 724

- (d) stamped structural drawings;
  - (e) stamped fire engineering report (FER); and
  - (f) occupancy permit dated 4 December 2015 (Occupancy Permit).
7. Please tell us if you require any further documents for your response to this brief.
8. If you possess other relevant documents and rely on them in your response to this brief, please list those documents in your response.
9. With respect to the construction of the Property:
- (a) the planning permit was issued on 12 October 2010;
  - (b) the Property was built between October 2013 and December 2015 by Mr Chris Potiriadis and Mr Joseph Salvo and/or companies associated with Messrs Potiriadis and Salvo, being Jopsal Pty Ltd and CLP Electrics Pty Ltd (Builders). We understand that the Builders were engaged by the developer, Murray Rd Developments Pty Ltd, of which Messrs Potiriadis and Salvo were directors; and
  - (c) the other relevant persons involved in the build were:
    - (i) Gary Dean of Reddo Pty Ltd, engaged as the Building Surveyor;
    - (ii) CHT Architects Pty Ltd, engaged as the Architect; and
    - (iii) Garry Weir of Razzi Weir Group Unit Trust trading as RAW Fire Safety Engineering, engaged as the Fire Engineer.
10. You produced the Building Report in September 2021 under your engagement with the Owners Corporation. The Building Report identified numerous water ingress defects at the Property, including (but not limited to):
- (a) failure to properly waterproof and tile balconies, terraces and courtyards;
  - (b) failure to properly waterproof planter boxes; and
  - (c) failure to integrate vertical wall cladding (fibre cement and expanded polystyrene) with horizontal surfaces (balconies, terraces, etc) to allow for proper drainage, leading to water ingress and moisture build-up in walls.
11. Due to your existing familiarity with the Property from your preparation of the Building Report, we have not detailed further background information in this brief.

#### Your responsibilities as an expert witness

12. As you are aware, your role is that of an independent expert, and not an advocate for any party. Although you are retained by the Owners Corporation, you are retained as an independent expert to potentially assist the County Court. Your overriding duty is to the Court. The Court expects you to be objective, professional and to form an independent view about the matters on which your opinion is sought.
13. Please read "Form 44A – Expert Witness Code of Conduct" of the *County Court Civil Procedure Rules 2018* (Expert Witness Code of Conduct) carefully and ensure that you comply with it. A copy of the Expert Witness Code of Conduct is at Tab 1 of your brief.

14. As required by the Expert Witness Code of Conduct, your report must give details of your qualifications, and of the literature, documents and other material used in providing the report. All facts and assumptions on which your opinion is based should be clearly and fully stated. You should not avoid considering material facts, regardless of the impact your concluded opinion may have in the proceedings.
15. Your report should be clear and unambiguous. You should give reasons for each opinion. Where appropriate, you should also clearly state the methodology you have used in reaching your conclusions. The report should also be accompanied by clear copies of any photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter to which the report refers.
16. Until your report is in its final form, it should not be signed. You should, however, be aware that unsigned draft reports may need to be disclosed to other parties to a proceeding. If, after exchange of reports prepared by the other parties or at any other stage, you change your view on a particular matter for any reason, you should inform us in writing of the change of view without delay, including the reasons for the change.
17. If, for any reason, you consider that your opinion is not properly researched because of insufficient data, or for any other reason, you should state clearly that your opinion is provisional. Similarly, if you believe your opinion to be incomplete or inaccurate without some qualification, that qualification must be stated in your report.
18. You should make it clear if a particular question or issue falls outside your area of expertise.
19. Your report should conclude with the following statement and declaration:

*"I, [insert], of [insert], acknowledge that I have read the Code of Conduct for expert witnesses in proceedings in the County Court and I have made all the inquiries which I believe are desirable and appropriate, (save for any matters identified explicitly in the report) and that no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Court."*

#### Retainer

##### Your brief

20. You are engaged to:
  - (a) review the documents provided to you in this brief and the documents previously provided to you or used in the preparation of your Building Report;
  - (b) refer to your Building Report, in particular, the areas where you have recommended further investigations be carried out;
  - (c) inspect the Property and adjoining apartments (if access can be provided), for the purposes of carrying out necessary investigations to determine any new sources of water ingress or the source of water ingress or other defects identified in your Building Report; and
  - (d) having regard to:
    - (i) the building design; and

- (ii) the *Building Act 1993* (Building Act), the *Building Regulations 2018* (Building Regulations), the Building Code of Australia (Code) and any relevant Australian Standards at the time of the issue of the Building Permits,

prepare a report which sets out your opinion on:

- (iii) the source or sources of the water ingress or other defects occurring at the Property; and
- (iv) having identified the source or sources of water ingress or other defects occurring at the Property following your further investigations:
  - (A) whether the construction of the Property complies with the Building Act, the Building Regulations, the Code and any relevant Australian Standards, with respect to the water ingress;
  - (B) the nature, extent and cause of any source or sources of water ingress or other defects or related non-compliant work occurring at the Property; and
  - (C) a scope of works necessary to rectify the source or sources of water ingress or other defects or non-compliant work occurring at the Property.

- 21. The Owners Corporation has not commenced any legal proceedings yet, but they may decide to do so. Accordingly, in addition to the terms of this letter, your retainer is governed by the Expert Witness Code of Conduct. You must comply with the Expert Witness Code of Conduct in undertaking your work and providing your report, and in preparation for giving evidence before the Court, if that is required.
- 22. From time to time, we may also require you to respond to additional evidence or expert opinions if and when received from other parties. You may need to be available to give evidence at the Court, or another Victorian court, a tribunal, or other statutory decision-maker, at some time during the course of your retainer.

#### Confidentiality

- 23. Your independent expert report and any drafts prepared in accordance with your retainer are confidential and are not to be copied or used for any purpose unrelated to the retainer without the permission of the Owners Corporation.
- 24. Similarly, all material supplied to you by Holding Redlich is confidential and must not be copied or used for any purpose unrelated to your retainer without the permission of the Owners Corporation.
- 25. Your report and any draft reports should have the following words inserted on the cover page:

*This document is protected by legal professional privilege. To ensure that privilege is not waived, please keep this document confidential and in a secure place. This document should not be distributed, nor any reference to it made, to any person not directly involved in making decisions on the subject matter of this document. If this document is requested by a government officer, please do not show it to or discuss its contents with the officer, but contact Holding Redlich immediately to ensure that privilege is claimed over the document.*

26. You, and your staff, may also be requested to sign a deed of confidentiality, if you are required to review documents provided by the other parties on a confidential basis.
27. You may be required to return all documents, copies and workings at the end of your retainer.

#### Conflicts of interest

28. As an independent expert, it is important that you are free from any possible conflict of interest in the provision of your advice. You should ensure that you have no connection with any party to the proceedings which would prevent you from providing your opinion in an objective and independent manner.
29. Please confirm that you have no conflict involving any of the parties listed in paragraph 9.
30. If any conflict or potential conflict becomes apparent to you during your work on this matter, please tell us immediately.

#### Fees

31. Prior to proceeding with any work under this brief, please provide a fee estimate for the preparation of a Court-compliant expert report so we can obtain instructions from the Owners Corporation.
32. If you become aware that your estimate is likely to alter in any material way, please notify us immediately so we can obtain approval for any material cost increase.
33. Your expenses such as taxis, parking, couriers, printing etc should be billed at cost.
34. The Owners Corporation is your client and is responsible for payment of your reasonable fees, although for administrative purposes, we ask that your accounts be addressed to our office.

#### Communications

35. Please direct all communications, whether verbal or written, to our office so that we can coordinate all activities in connection with the anticipated proceeding and ensure privilege is maintained as appropriate.
36. If you have any questions or comments about this assignment, please contact Jessica Xu above, or Lachlan Ingram at (03) 9321 9709 or [Lachlan.Ingram@holdingredlich.com](mailto:Lachlan.Ingram@holdingredlich.com).

Yours sincerely



Holding Redlich

# ATTACHMENT B

## Equipment used

Unit	Function	Calibration
<p>Tramex – ME5 Moisture encounter</p>  <p>The image shows a black handheld device with a color display. The display has two scales: a 'WOOD LMC' scale at the top and a 'COMPARATIVE' scale below it. The device has several buttons and a speaker grille. The text 'TRAMEX' is visible at the top of the device, and 'MOISTURE ENCOUNTER' is at the bottom. Below the device, it says '5000 RESISTANCE - 5000 5000'.</p>	<p>The ME5 enables non-invasive moisture measurement and detection in a wide range of building materials. The instrument operates on the principle that the electrical impedance of a material varies in proportion to its moisture content.</p> <p>To measure/detect moisture, the three co-planar conductive rubber electrodes mounted on the base of the instrument are lightly pressed onto the material sample.</p> <p>A non-destructive low frequency electric field penetrates under the material to test to a depth of approximately 30mm or 10mm in shallow depth mode.</p> <p>There are two scales on the meter face. A Wood Scale and a Comparative Scale.</p>	<p>To prepare the meter to assess moisture in materials, I calibrated it for the substrate to be tested by using the Tramex Calibration box and ensured the reading was correlated with the surface to be scanned – such as timber or drywall.</p>

Unit	Function
<p>Protimeter Mini</p> 	<p>Pin less reference range <i>Measures surfaces</i> in WME (wood moisture equivalent).            DRY (green) &lt;170            RISK (yellow) 170 to 200            WET (red) 200 to 999</p> <p>Pin mode reference range: <i>Measures sub-surfaces</i> in MC% (moisture content) in timber, and other materials range: 8% to 100%WME.            DRY (green) &lt;17            RISK (yellow) 17 to 20            WET (red) &gt;20</p>

Unit	Function and how it was used
<p>Flir E60bx thermal image camera</p> 	<p>IR Resolution            320 x 240 (76,800 Pixels)            Thermal sensitivity    &lt;0.05° C</p> <p>Temperature Range (-20 to 120° C)            Field of View            25° x 19° / Manual focus distance            400mm/0</p> <p>The thermal camera was used to scan rooms in the building to identify temperature differences, or thermal anomalies, which could represent a moisture problem.</p> <p>The device was turned on and the unit pointed at various walls and surfaces. The colour variances in the camera depict thermal changes with red/orange being hot and dark blue/purple being cooler.</p> <p>Anomalies in the built environment were investigated further using a moisture meter.</p>

# ATTACHMENT C

CV – Jeff Beck

## **JEFF BECK**

**Address:** Post Office Box 131 Forest Hill Victoria 3131

### **Occupation:**

Building Consultant/Principal: JWB & Associates Pty Ltd  
Builder: Platinum Residential Constructions Pty Ltd

### **Registrations:**

Registered Building Practitioner – Building Surveyor Unlimited – BS-U 100302  
Registered Building Practitioner – Building Surveying Technician – BSP 3254  
Registered Building Practitioner – Building Inspector Limited – IN-L 46110  
Registered Building Practitioner – Domestic Builder Unlimited – DB-U 28141

### **Qualifications:**

Technical and Further Education - TAFE:  
Diploma of Building Surveying – Holmesglen Institute and CPD training.  
Certificate III Carpentry (Trade)  
Certificate III Construction Waterproofing (Trade)  
Certificate IV Building & Construction

Institute of Inspection Cleaning and Restoration Certification:  
IICRC Water Damage Restoration Technician (WRT)  
IICRC Applied Structural Drying (ASD)  
IICRC Applied Microbial Remediation Technician (ARMT)

University of Melbourne:  
Thermography – Level 1

Australian College of Environmental Studies:  
Mould Testing Technician  
Advanced Mould Testing Technician

Other:  
MBA New South Wales: Building Inspection and Report Writing  
Rapid Training NSW: Timber Pest Inspection  
Dr Geoffrey Marnell: Technical Writing

## **Appointments**

Appointed Special Referee, VCAT 2023

Appointed Single Joint Expert, County Court Victoria, 2022 and 2023

MBAV – Judge, Excellence in Housing Awards 2019, 2022, 2023, 2024 and 2025

MBAV – Judge, Regional Building Awards 2022 and 2023

## **Current Association Memberships:**

Master Builders of Victoria - MBAV

Australian Institute of Building Surveyors – AIBS

Australian Society of Building Consultants – ASBC - Past Committee Member

Australian Institute of Waterproofing - AIW

Australian Professional Thermography Association - APTA

Building Dispute Practitioners Society - BDPS

## **Experience:**

Building Industry: Carpentry; Waterproofing, Building Construction, Supervision and Project Management on predominately Architectural Domestic Construction.

Building Surveyor (current): Class 1 and Class 10 building or incidental structure; and Class 2 to Class 9 building or incidental structure –  
(a) With a floor area not exceeding 500m<sup>2</sup>; and  
(b) Not higher than 2 storeys.

Building Inspector (current): Class 1 and Class 10 buildings to 500 sq/m.

Domestic Builder Unlimited (current): Domestic Construction, extensions/second storey extensions.

Building Consultancy (current): Water ingress, Water damage, Water damage remediation, Water damage restoration, Mould assessment, Quality assurance; Defect analysis; Maintenance reporting, Maintenance Manual reporting and Expert witness reports.

## **Examples of Expert Witness Decisions:**

Walter Wang v Kim Moutidis [2025] VCC 1156 (18 August 2025)

Construct Homes Pty Ltd v Robinson (Building and Property) [2024] VCAT 710 (26 July 2024)

Appointed Special Referee, VCAT, Sztanski v Extension Builders Australia & Ons (2023)

Li v Smith (Building and Property) [2023] VCAT 112 (3 February 2023)

Mike & Shan Pty Ltd v SJ Higgins Pty Ltd [2023] VCC 895 (3 June 2023)

Jolin Nominees Pty Ltd v Daniel Investments (Aust) Pty Ltd (Building and Property) [2022] VCAT 401 (13 April 2022)

Owners Corporation PS623721 v Shangri- La Construction Pty Ltd (Building and Property) [2022] VCAT 1499 (30 December 2022)

Miceli v Building Science Pty Ltd (Building and Property) [2021] VCAT 1035 (8 September 2021)

Mazzeo v Camilleri (Building and Property) [2021] 150 (1 March 2021)

Lu v Oakmont Properties Pty Ltd (Building and Property) [2020] VCAT 604 (4 June 2020)

DJJ Promotions Pty Ltd v Gianacopoulos (Building and Property) [2019] VCAT 177 (6 February 2019)

Regulation Pty Ltd v Platinum Building Group Pty Ltd (Building and Property) [2019] VCAT 1294 (27 August 2019)

Owners Corporation PS 630765 v Ascot Constructions Pty Ltd (Building and Property) [2018] VCAT 1884 (30 November 2018)

Cao v GE Builder Pty Ltd (Building and Property) [2017] VCAT 725 (22 May 2017)

Coghlan v Construc Builders Pty Ltd (Building and Property) [2017] VCAT 992 (3 July 2017)

Spectre Group Pty Ltd v Webb (Building and Property) [2017] VCAT 1944 (24 November 2017)

Larsson v Priftis (Building and Property) [2017] VCAT 2130 (20 December 2017)

Burleigh v EWH South Morang Pty Ltd (Building and Property) [2016] VCAT 2113 (19 December 2016)

Ahmed v City of Whittlesea (Building and Property) [2015] VCAT 2042 (23 December 2015)

Advance Building and Engineering Pty Ltd v Jovevski (Building and Property) [2015] VCAT 740 (27 May 2015)

### **Building Inspection Report Disclaimer:**

1. This building has been inspected on the date and in the prevailing weather and environmental conditions specified in this report. The report describes the condition of those elements of the property described in the client brief and lists faults then visible. This report is based on a visual inspection of the property and therefore the defects contained in this report may not be exhaustive.
2. The report does not include:
  - (a) Faults in inaccessible areas of the building.
  - (b) Faults not apparent on visual inspection.
  - (c) Faults only apparent in different weather or environmental conditions.
  - (d) Faults resulting from different uses of the building.
  - (e) Minor faults (i.e., hairline plaster cracks, jamming doors, windows, and catches, etc.).
  - (f) Faults outside the scope of the client brief.
3. Unless otherwise specified:
  - (a) No soil has been excavated.
  - (b) No plants or trees have been removed.
  - (c) No fixtures, fittings, cladding or lining materials have been removed.
  - (d) No items of furniture or chattels have been moved.
  - (e) No enquiries of Councils or other Authorities or persons have been made for the purposes of inspecting the building and providing this report.
4. This report is provided solely for the use of the clients named on the face of this report and no responsibility to other persons is accepted.
5. This report does not include any special investigation of insect attack (e.g., borer, termite etc.) or soil contamination. Any reference to this has been based on a casual visual inspection. JWB & Associates P/L recommends that you engage a licensed pest inspector to conduct an inspection and provide a report on potential pest infestation.

388 Murray Road Preston  
Window & Balustrade – Investigation Report

September 2025

Prepared For:

**Owners Corporation PS733538P**

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The mention of any company, product or process in this report does not constitute or imply endorsement by Façade Engineering.

REV	DATE	DETAILS
00	1.09.2025	Issue for Information

## 1 Introduction

### 1.1 Project Information

Address: 388 Murray Road, Preston  
Client: Owners Corporation PS733538P

### 1.2 Author

Name: Chris Drzewucki.  
Address: 35 Nerissa Grove, Oak Park, 304'6  
Qualifications: Bachelor of Engineering in Mechanical Engineering

For full list of experience refer to Appendix A.

### 1.3 Brief

Due to some issues raised in regard to the balustrades and the windows the owner's corporation requested for a review of the balustrade system and windows and prepare a report which sets out your opinion on whether:

1. The design of the glass balustrades at the Property are compliant with the design documentation and the appropriate standards at the time of installation.
2. The glass balustrades have been installed appropriately.
3. The design of the windows at the Property are compliant with the design documentation and the appropriate standards at the time of installation, and
4. The windows installed, particularly on the higher floors of the building, are of adequate quality and installed appropriately.

Refer to Appendix F for full details.

### 1.4 Reviewed Documentation

Documents
Order 44 Expert Code of Conduct
Architectural Drawings
Plan of Subdivision.pdf
Construction Folder Documents
Building Permits Folder Documents
Plans Folder Documents
Certificate of Occupancy.pdf
Fire Engineering Report - RawFire.pdf
JWB & Associates Report.pdf
Maison Glass & Aluminium Report.pdf
FW 388 Murray Rd Preston - alleged glass balustrade defects.msg
Various Codes and Standards
AFB-01 Concrete Fix Certification Stamped.pdf
AFPS-02 Concrete Fix Certification Stamped.pdf
1507-Design Balustrades.pdf
15 Windows and Door Certificates
16 Glass Balustrades Certificate.jpg
Murray Rd Cert.pdf
Murray Rd Dev.pdf
Murray Road Certification letter.docx

### 1.5 Limitations

The investigation work is limited to those described above. This report has been prepared for Owners Corporation PS733538P and outlines opinion and analysis only.

The inspections performed were carried out diligently however, it was visual only and therefore items hidden have not been seen and hence reported on.

1.6 Ares of Inspection and Dates of Inspection

Table 1

Date Inspected	9th May 2025
Apartment	308
	415
	226
	G25
	305
	127
	124
	306
General	221
	Roof
	Corridor Windows
	Ground Floor Balustrade

2 Background

388 Murray Road is a six-storey residential complex with 133 apartments, associated common property and a common property basement car park where the construction of the development was completed in 2015.



The external façade comprises rendered surfaces, CFC cladding, aluminium-framed windows, and glass balustrades. Following instances of glass balustrade failure, the owners corporation requested a review of the balustrade glazing, as well as an assessment of the window systems due to ongoing water ingress issues.

### 3 Windows

#### 3.1 General Observations

The site investigation found that the overall condition of the windows and sliding doors installed in the balcony areas was satisfactory. These elements did not appear to be a source of water ingress, as they are mostly recessed from the main façade. The inspection revealed a mix of Insulated Glass Units (IGUs) and single glazing, depending on the elevation. IGUs were installed in 101.6 mm x 50 mm centre-glazed frames, while single-glazed units were set in 101.6 mm x 44 mm frames.

Double-glazed windows were primarily located on the Murray Road and Spring Street elevations (refer to P3.1 & P3.2). The sealing between the window frames and surrounding substrates was found to be consistent and in good condition (refer to P3.3 & P3.4).



P3.1 – Typical Window / Sliding Door System with IGUs set back from the boundary of the building.



P3.2 – Typical Ground Floor Window / Sliding Door System



P3.3 – Good condition of seal between window / cladding



P3.4 – Good condition of seal between window / cladding

#### 3.2 Apartment 321

The Level 3 apartment is located at the corner of the building and features two façades—one facing north and the other west (refer to Figure 3.1). It was reported that water ingress occurs through the north-facing awning window and above the west-facing strip window assembly.

Upon inspection, the seals between the awning window frame and the surrounding substrate were found to be significantly deteriorated and torn, likely due to building movement. Additionally, the mitred corners of the awning frame were not flush, leaving gaps that were inadequately sealed, allowing water to penetrate even when the window is closed. Refer to P3.5 & P3.6.

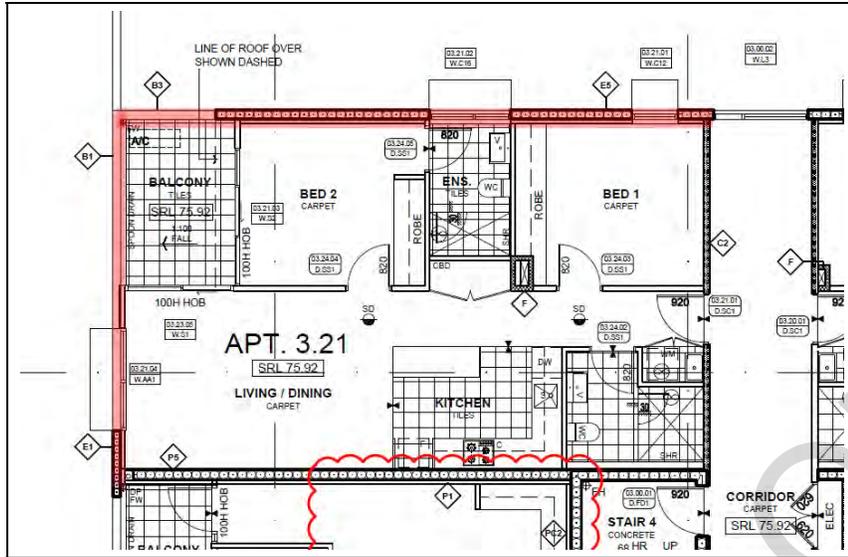


FIGURE 3.1 – APARTMENT 3.21 EXTERNAL FACADES



To remediate this window, the joints need to be properly prepared and the sealant reapplied. At the frame corners, a bead of silicone can be applied on the inside to act as a backing, and once cured, an external sealant should be applied along each mitred connection to ensure a continuous weatherproof seal.

During the inspection, it was observed that the water ingress affecting the west-facing strip window does not originate from the window itself, but from the structure and roof above. Evidence of concrete deterioration and material degradation was noted above the window head in the main structural element. Refer to Photos P3.7 and P3.8.



Further investigation determined that the water ingress is not related to the window itself but rather to cracking at the façade and roof/parapet interface. Inspection of the roof area above the window revealed signs of attempted rectification, including rough sealing and patching of both the façade and waterproofing membrane. Refer to P3.9 & P3.10.



Based on my assessment, this issue is associated with building movement. Once the underlying structural movement is addressed, the façade cracks can be effectively sealed, and the resulting water ingress mitigated. As water is penetrating through the structural element, it is recommended that a structural engineer evaluate the condition of the concrete in this area to determine any necessary remedial works.

### 3.3 Level 4 Corridor South Window

On Level 4, the window installed in the south-facing corridor (refer to Figure 3.2 for location) was found to have degraded sealant between the glass and frame. It appeared that the sealant had been forcibly removed from the joint, and given its location on the exterior, it is likely the damage was caused by birds or other vermin. Refer to P3.11 & P3.12.

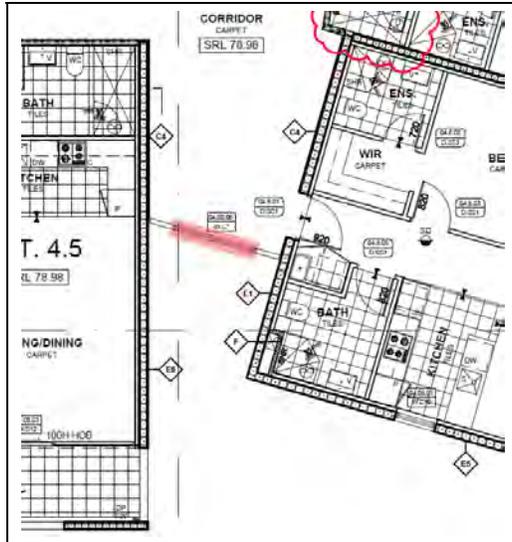


FIGURE 3.2 – LEVEL 4 SOUTH CORRIDOR WINDOW



P3.11 – Sealant missing from joint



P3.12 – Sealant missing from joint

This issue can be addressed by effectively preparing the joint and resealing.

### 3.3 Level 3 West Corridor North Window

On Level 3, the window installed in the north-facing corridor (refer to Figure 3.3 for location) was found to have no sealant installed between the glass and the frame, suggesting the glass panel had either been removed to access the level 3 roof or it has been replaced and the seal was never reapplied. Refer to P3.13 & P3.14.

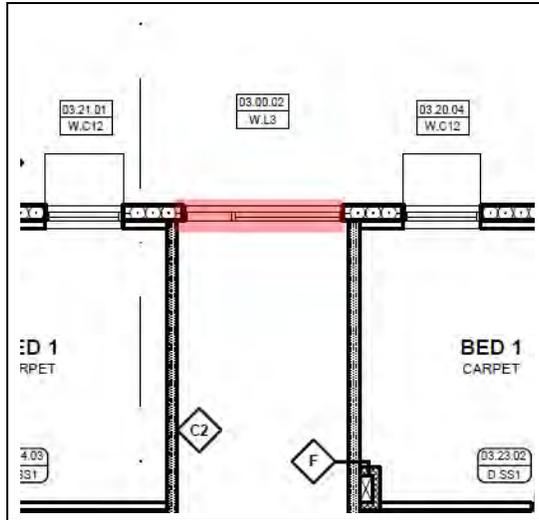


FIGURE 3.3 – LEVEL 3 NORTH CORRIDOR WINDOW



P3.13 – Sealant missing from joint



P3.14 – Sealant missing from joint

This issue can be addressed by effectively preparing the joint and resealing.

**4 Balustrades / Screens Installation**

The onsite inspection revealed that there are three types of glazed balustrades / screens installed.

- B1 – Semi-Frameless Balustrade
- B2 – Semi Frameless Privacy Screen Balustrade
- B3 – Semi Frameless Screen Fixed to Precast

The balustrades and privacy screens are installed into ground floor apartments facing Murray Road and Spring St and installed from Level 1 to Level 3 on the West Elevation.

**4.1 B1 – Semi-Frameless Balustrade**

The B1 balustrade is a semi-frameless system designed to resemble frameless glass appearance. It features vertical structural stanchions and a horizontal top handrail. Typically, the system incorporates 6mm thick toughened etched glass panels, which are secured within the vertical stanchions and top rail, while the bottom edge remains unsupported, maintaining a frameless aesthetic. Refer to P4.1 & P4.2.



P4.1 – B1 – Semi-Frameless Balustrade



P4.2 – B1 – Semi-Frameless Balustrade

The system was noted to be in line with the BMA Concepts semi frameless balustrade system<sup>1</sup>, where the glass is supported by a vertical centre cavity stanchion and top horizontal interlinking handrail. Refer to P4.3 & P4.4.



P4.3 – B1 – Interlinking Handrail



P4.4 – B1 – Centre Glazed Stanchion and Base Plate Cover

Site measurements confirmed that the balustrade height is 1050mm from the finished floor level (FFL) to the top of the handrail. The glass panels were approximately 980mm in height, with widths ranging from 450mm to 1200mm. Refer to Figure 4.1. The vertical stanchions consist of 50mm SHS sections, and the top handrail measures 80mm x 26mm.

<sup>1</sup> Refer to appendix D for the technical drawing of the BMA Concepts Balustrade.

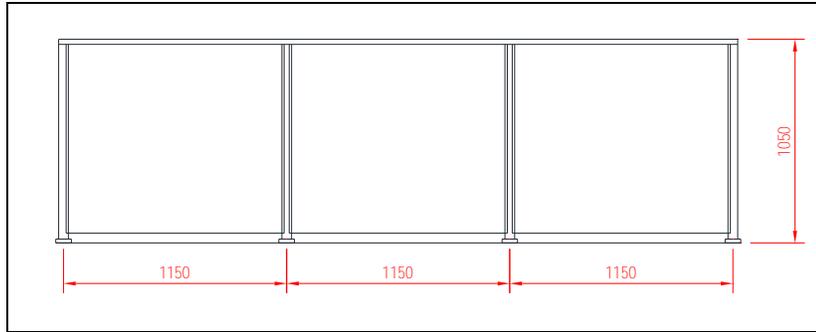


FIGURE 4.1 – TYPICAL B1 BALUSTRADE SETOUT

**4.2 B2 – Semi-Frameless Balustrade / Screen**

Like the B1 balustrade, B2 is a semi-frameless system that incorporates frameless glass with vertical structural stanchions and a horizontal top handrail. From our site measurements, we found the system to be constructed similarly to the B1 balustrade, with 6 mm thick toughened etched glass secured within the vertical stanchions and horizontal top rail, while the bottom edge remains unsupported (refer to P4.5 & P4.6).



P4.5 – B2 – Semi-Frameless Screen

P4.6 – B2 – Semi-Frameless Screen

The site measurements indicated the height of the screen to be approximately 1700mm from the finished floor level (FFL) to the top of the handrail with varying widths from 700mm to 1050mm wide noted.<sup>2</sup> Refer to figure 4.2.

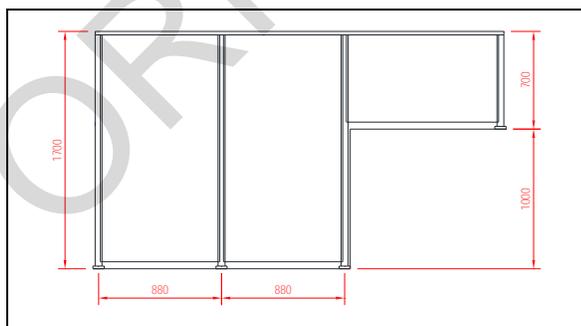


FIGURE 4.2 – TYPICAL B2 SCREEN SETOUT

**4.3 B3 – Semi-Frameless Screen Fixed to Precast**

Like balustrades B1 and B2, B3 utilises the same stanchion, handrail, and glass type; however, it is fixed to the top of the precast, providing a privacy screen to the external balconies (refer to P4.7).

<sup>2</sup> Refer to appendix B for Screen Glass Sizes



P4.7 – B3 – Semi-Frameless Privacy Screen

The site measurements indicated the height of the screen to be approximately 1000mm from the finished floor and 700mm from the top of the precast. The size of the panels inspected were measured to be 1010mm wide x 700mm high. Refer to figure 4.3.

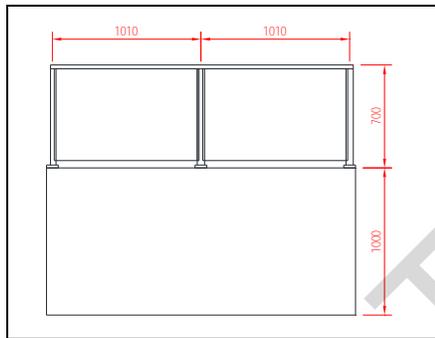


FIGURE 4.3 – TYPICAL B3 SCREEN SETOUT

#### 4.4 General Observations

It was observed that the balustrade and privacy screen installations are consistent with a proprietary system of approximately ten years in age, exhibiting typical signs of weathering and ageing. Inspection of the systems did not reveal any evidence of defects. The perceived structural robustness of the balustrades and screens was considered adequate when subjected to applied loads.

It was noted in one area that the gasket has dislodged from the handrail and should be reinserted. Refer to P4.8 & P4.9.



P4.8 – B1 – Semi-Frameless Balustrade – dislodged gasket



P4.9 – B1 – Semi-Frameless Balustrade – dislodged gasket

In my assessment, the use of privacy screens as the primary balustrade for the apartments along the West Elevation represents a suboptimal design approach and does not correspond to good design practices. These screens serve as the main fall-protection barrier for the balcony areas; however, the installation method introduces significant safety risks and potential for failure.

Key concerns identified include:

1. The use of unframed 6 mm toughened glass.
2. Exposed glass edges at floor level, increasing the risk of chipping or breakage occurring from incidental contact.
3. The absence of a handrail at the standard balustrade height, reducing lateral support and user safety.

The glass is supported along 3 sides with the bottom edge unsupported (semi-frameless) and as the bottom edge is located at floor level there is a high risk that incidental impact may occur and cause the glass to shatter, which if it was human impact as there is no handrail may result in the person falling through the opening to the ground below. Refer to P4.10 & P4.11.



## 5 Balustrade / Screen Design

### 5.1 Balustrade / Screen System

#### 5.1.1 B1, B2 & B3 Glass Design

To confirm the adequacy of the installation the structural design adequacy of the glass was confirmed through engineering.

The following design loads were used to confirm the adequacy of the Glass:

Wind Load +ve = 1.67KPa (+ve Wind Load) – Refer to Appendix C for Wind Load Analysis

Wind Load -ve = -1.61KPa (-ve Wind Load) – Refer to Appendix C for Wind Load Analysis

From AS1170.1 Table 3.3 Classification C3<sup>3</sup>

Live Load 1 = 1.0KPa

Live Load 2 = 0.5KN @ Centre of Panel

Live Load 3 = 0.5KN @ Bottom Free Edge Centre

The strength of 6mm toughened acid etched glass varies where at the edge it is calculated as: 73.09MPa and away from the edge the maximum allowable stress is 91.37MPa. This strength was determined based on Clause 3.3.2 AS1288 where:

$$\text{Ultimate design capacity} = \phi R_u = \phi c_1 c_2 c_3 [f_t' X]$$

$c_1 = 2.5$  (Glass Type Factor – Toughened)

$c_2 = 1.0$  (Surface Type Factor – acid etching)

$c_3 = 1.0$  (load duration factor – short term / medium term)

As the glass is etched the surface type factor is classified as 1 however the minimum thickness needs to be used in the calculation in accordance to AS4667, which is 5.5mm for 6mm glass, therefore the engineering calculations performed are based on 5.5mm thick glass not 5.8mm as per standard.

Using the design loads listed above a detailed Finite Element Analysis was performed on the typical, smallest, and largest panels to determine if the installed glass is adequate to resist the loads. The panels analysed are outlined in the table below and the full list of panels in Appendix B.

B1_1	Width (mm)	Height(mm)	Table 3	
	1200	980		
Load Case	Stress (MPa)	Strength Suitability (AS1288:2006)	Deflection (mm)	Deflection Suitability (AS1288)
WL+ve	41.4	Ok	19.8	Ok
WL-ve	39.9	Ok	19.1	Ok
LL1	37.2	Ok	18.4	Ok
LL2	39.5	Ok	11.5	Ok
LL3	84.2	Not Ok	24.1	Not Ok

B1_2	Width (mm)	Height(mm)		
	1090	980		
Load Case	Stress (MPa)	Strength Suitability (AS1288:2006)	Deflection (mm)	Deflection Suitability (AS1288)
WL+ve	37.5	Ok	15.0	Ok
WL-ve	36.1	Ok	14.4	Ok
LL1	33.6	Ok	13.9	Ok
LL2	39.0	Ok	9.1	Ok
LL3	83.2	Not Ok	20.5	Not Ok

B1_3	Width (mm)	Height(mm)		
	480	1050		
Load Case	Stress (MPa)	Strength Suitability (AS1288)	Deflection (mm)	Deflection Suitability (AS1288)
WL+ve	8.8	Ok	0.7	Ok
WL-ve	8.5	Ok	0.6	Ok
LL1	7.9	Ok	0.6	Ok
LL2	32.8	Ok	1.5	Ok
LL3	68.0	Ok	3.9	Ok

<sup>3</sup> Refer to Appendix for Extract from AS1170.1

As illustrated in the Balustrade B1 analysis, the 6mm thick glass is unsuitable to support the concentrated live load when applied along the free bottom edge of the glass panel.

B2_1	Width (mm)	Height(mm)	Table 4	
	880	1700		
Load Case	Stress (MPa)	Strength Suitability (AS1288:2006)	Deflection (mm)	Suitability (AS1288)
WL+ve	33.7	Ok	8.5	Ok
WL-ve	32.4	Ok	8.2	Ok
LL1	30.1	Ok	7.8	Ok
LL2	36.0	Ok	5.2	Ok
LL3	79.2	Not Ok	14.0	Ok

B2_2	Width (mm)	Height(mm)	Table 4	
	1080	1700		
Load Case	Stress (MPa)	Strength Suitability (AS1288:2006)	Deflection (mm)	Suitability (AS1288)
WL+ve	49.2	Ok	17.3	Ok
WL-ve	47.3	Ok	16.7	Ok
LL1	43.8	Ok	16.0	Ok
LL2	38.1	Ok	7.1	Ok
LL3	82.7	Not Ok	18.9	Not Ok

B3_1	Width (mm)	Height(mm)	Table 5	
	1050	700		
Load Case	Stress (MPa)	Strength Suitability (AS1288)	Deflection (mm)	Suitability (AS1288)
WL+ve	25.9	Ok	9.8	Ok
WL-ve	25.0	Ok	9.5	Ok
LL1	23.3	Ok	9.1	Ok
LL2	37.7	Ok	9.3	Ok
LL3	81.8	Not Ok	18.7	Not Ok

Like B1, the glass used in balustrades B2 and B3 has been determined to be unsuitable for withstanding the concentrated design live loads specified in AS1170.1. In addition to the glass being overstressed under concentrated loading, AS1288:2006 Table 7.3 specifies that the recommended maximum span for 6 mm thick toughened glass, when installed as an infill panel, is 590 mm to resist a concentrated load of 0.5KN (refer to Figure 5.1). In most balustrade and screen installations, the glass span exceeds 590 mm.

Balustrade in fill design load	Maximum glass span (mm)												
	Laminated safety glass (mm)				Toughened safety glass (mm)					Laminated toughened safety glass (mm)			
	6	8	10	12	6	8	10	12	15	8	10	12	16
0.50 kPa	910	1210	1490	1770	1240	1640	2000	2300	2700	1620	1980	2290	2830
1.0 kPa	640	850	1050	1250	980	1300	1650	1930	2270	1290	1630	1920	2380
1.5 kPa	520	690	860	1020	860	1140	1430	1730	2050	1120	1420	1720	2150
0.25 kN	270	450	670	1250	940	1860	2410	2910	3610	1820	2390	2880	3800
0.5 kN	120	210	330	470	590	1070	1860	2310	2860	1030	1830	2290	3040
1.5 kN	40	70	110	150	210	360	540	990	1910	350	530	930	2110

NOTES:

- The spans have been calculated for medium-term live loads.
- Deflection is limited to span/60 or 30 mm maximum.
- Glass thicknesses are nominal thickness and may be used for toughened laminated glass excluding the interlayer thickness.
- In some exposed situations, the wind load may exceed the infill design load and thicker glass may be required by the design live load.

FIGURE 5.1 – TABLE 7.3 FROM AS1288:2006



A finite element analysis of the system included an analysis on the vertical stanchion and handrail for each balustrade / screen type, where for the balustrade the stanchion, handrail and glass design was used as identified in drawing 18474-S01 and for the screens drawing 18474-S05.

The analysis revealed that B1 and B2 are not adequate for the application as the calculated deflection exceeds the limit of  $\text{span}/100^4$  although the strength is within the allowable limit. Refer to table 6.

B1 Stanchion	Width (mm)	Height(mm)	Table 6		
	1200	1050			
Load Case	Stress (MPa)	Strength Suitability - Alloy 6005A-T5	Deflection (mm)	Deflection Suitability (Span/100)	Span / x
WL+ve	118.3	Ok	12.4	Not Ok	84.81
WL-ve	112.7	Ok	12.0	Not Ok	87.72
LL1	104.4	Ok	11.3	Not Ok	93.14
LL4	150.4	Ok	21.4	Not Ok	49.02
LL6	100.3	Ok	14.3	Not Ok	73.53

B2 Stanchion	Width (mm)	Height(mm)	Table 6		
	880	1700			
Load Case	Stress (MPa)	Strength Suitability - Alloy 6005A-T5	Deflection (mm)	Deflection Suitability (Span/100)	Span / x
WL+ve	150.2	Ok	40.8	Not Ok	25.75
WL-ve	144.3	Ok	39.6	Not Ok	26.54
LL1	133.7	Ok	37.8	Not Ok	27.78
LL4	118.3	Ok	44.1	Not Ok	23.83
LL6	107.5	Ok	40.4	Not Ok	26.01

B3 Stanchion	Width (mm)	Height(mm)	Table 6		
	1010	700			
Load Case	Stress (MPa)	Strength Suitability - Alloy 6005A-T5	Deflection (mm)	Deflection Suitability (Span/100)	Span / x
WL+ve	43.6	Ok	2.1	Ok	340.32
WL-ve	42.3	Ok	2.0	Ok	351.05
LL1	39.2	Ok	1.9	Ok	367.32
LL4	84.4	Ok	5.4	Ok	129.41
LL6	66.9	Ok	4.3	Ok	163.55

The deflection criteria of  $\text{span}/100$  is an accepted limit for balustrades in the industry. However, based on standard aluminium design, the deflection limit is  $\text{span}/125$  for cantilevered members and  $\text{span}/250$  for normal beams.

## 5.2 Design / Code Compliance

As construction was completed in 2015 the relevant standards and codes that were to be adhered to include:

BCA 2015 Volume 1

AS1170.1: A2(2002) – Structural design actions Part 1: Permanent, imposed and other actions

AS1170.2: A3(2013) – Structural design actions Part 2: Wind actions

AS1664.1: – Aluminium Structures Part 1: Limit State Design

AS1664.2: – Aluminium Structures Part 2: Allowable Stress Design

AS1288:2006 (A2 – 2011) – Glass in Buildings Selection and Installation

AS2208: 1996 – Safety glazing materials in Glazing

The use of monolithic toughened glass on the external skin of a building is not recommended as any breakage usually results in fragments and potentially large clumps of glass showering the area below.

To mitigate this issue, the glass code AS1288 was updated in 2011 which required that all toughened glass installed more than 5 m above the finished floor or ground level be heat soaked. For the glass installed into the balustrades that are greater than 5m from finished floor level there is no evidence that the 6mm toughened glass has been effectively heatsoaked, however three certificates were issued by BMA Concepts Pty Ltd outlining the compliance of the balustrade and privacy screens installation, which are:

1. Compliance Certification – Balustrades, dated 24/11/15<sup>5</sup>.

<sup>4</sup>  $\text{Span}/100 = \text{height} / 100 = \text{allowable deflection}$ ,  $1050/100 = 10.5\text{mm}$

<sup>5</sup> Murray Rd Cert.pdf

2. Balustrade and Privacy Screen Installation, dated 24/11/15<sup>6</sup>.
3. Glazing Compliance Certificate, dated 5/10/15<sup>7</sup>.

Certificate 1 confirms that the aluminium-framed glass balustrades were installed in accordance with the supplied engineering certification and that the glazing complies with AS 1288. Certificate 2 confirms that the privacy screens were installed in accordance with the drawings. As the specific titles of the certificates and drawings are not identified, it is assumed these references relate to drawings 18474-S01 and 18474-S05, together with Certificate 1507 – Design Balustrades issued by A.M. Design & Construction Pty Ltd.

The design certificate of compliance 1507 provided by A.M. Design & Construction Pty Ltd states that the balustrade design satisfies the requirements of the National Construction Code 2015, along with applicable loading, concrete, and steel structure standards. Notably, however, this certificate does not reference AS1288 or AS1664 (the aluminium code), which is of relevance given that the balustrades are primarily constructed from aluminium and glass. The certificate includes references to balustrade and screen drawings as previously noted, in particular:

- 18474-S01 Rev A dated 1/12/2015<sup>8</sup>
- 18474-S05 Rev A dated 1/12/2015<sup>9</sup>

The engineering drawings of each system provided by Clive Steele Partners is a generic structural design that can potentially be adapted to specific projects. These designs are general in nature and are not usually tailored to the specific requirements of individual projects. For this project the generic design provided was confirmed suitable and certified for the 388 Murray Road Project by BMA Concepts and A.M. Design & Construction.

While the several certificates reference applicable codes and standards, none provide confirmation that the glazing has been heat-soaked in accordance with AS1288. Compliance with AS1288 requires that fully toughened safety glass used in balustrades or screens located more than 5 m above ground level must undergo heat soak testing to reduce the risk of spontaneous breakage. In the absence of certification, it is concluded that the installed glass has not been heat-soaked and is therefore non-compliant. This non-compliance applies to all balustrades and privacy screens above 5m, including those installed on the West Elevation.

### 5.3 Installation Compliance

The site investigation identified installation methods and practices that we determined is not in accordance with the documented design.

Balustrades:

- Document 18474-S01 Rev A indicates when incorporating 6mm thick toughened glass the maximum post spacing allowed is 1000mm, however at ground floor there are a number of the panels that were measured to have posts installed at >1100mm wide. Refer to figure 5.4 – extract from drawing 18474-S01.

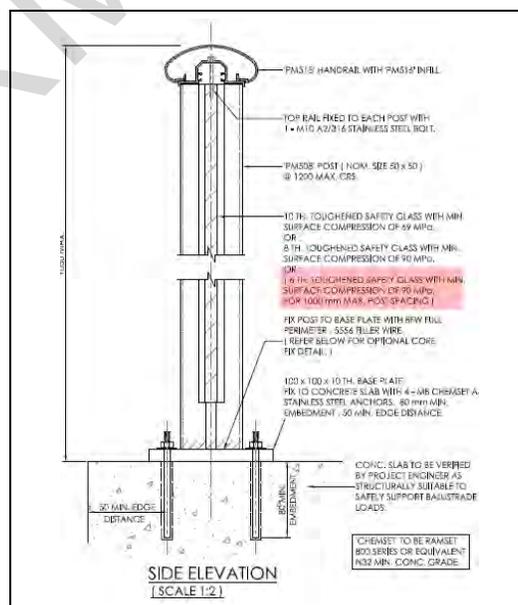


FIGURE 5.4 – EXTRACT FROM 18474-S01

<sup>6</sup> Murray Road Certification Letter.docx

<sup>7</sup> 16 Balustrade Certificate.jpg

<sup>8</sup> AFB-01 Concrete Fix Certification\_stamped.pdf

<sup>9</sup> AFPS-02 Concrete Fix Certification\_stamped.pdf

## Screens:

- The screen design outlined in 18474-S05 Rev A indicates a handrail at approximately 1050mm from the finished floor. These handrails have not been installed.
- The base plate securing the screen stanchion has been designed to be sitting on the slab and the specific site conditions to be verified by the project engineer, however at 388 Plenty Road the base plate was found to be cantilevering over the edge of the slab and not fully supported which is not in accordance to the certified design. It was also noted that the end stanchions have been fixed to a cantilevered plate and not to the base plates as per the requirements outlined in the design documents. Refer to P5.3.1 and P5.3.2 and Figure 5.5.

**Summary:**

The investigation determined that the balustrades and privacy screens are inadequate and non-compliant for their intended application, based on the following key findings:

1. Glass panel performance: The glass panels fail under specified load conditions, indicating non-conformance with the structural performance requirements for a compliant balustrade system.
2. Heat soaking of glazing: There is no evidence that the glass installed on balustrades and privacy screens located more than 5 m above ground level has undergone heat soaking as required by AS 1288, thereby increasing the risk of spontaneous breakage.
3. Aluminium stanchion deflection: Calculated deflections of the aluminium stanchions exceed permissible limits, compromising the structural integrity and safety of the system.
4. Glass span exceedance: In some instances, the glass span for balustrades exceeds the limits specified in the design drawings.
5. Deviation from certified design: The installation of privacy screen base plates and handrails deviates from the certified design documentation.

## 6 Windows

### 6.1 Window System(s) Installed

The window systems installed were determined to be 101.6mm x 50mm centre-glazed aluminium in the locations where insulated glass units were installed and 101.6mm x 44mm frames where the single glazing is installed. Double-glazed windows are primarily located on the Murray Road and Spring Street elevations.

### 6.2 Window System(s) Compliance

The architectural drawings, specifically A7.01, A7.02, and A7.03, specify the window systems as Capral 400 series. Site inspection confirmed that the installed windows are consistent with the specified series in overall size and style. The Capral 400 series is characterised by a 101.6mm x 44 mm frame for single-glass units and a 101.6mm x 50 mm frame for double-glass units. Verification measurements and visual examination indicate that the installed frames conform to these dimensions. Figures 5.5 and 5.6 illustrate the Capral 400 series frame profiles for reference.

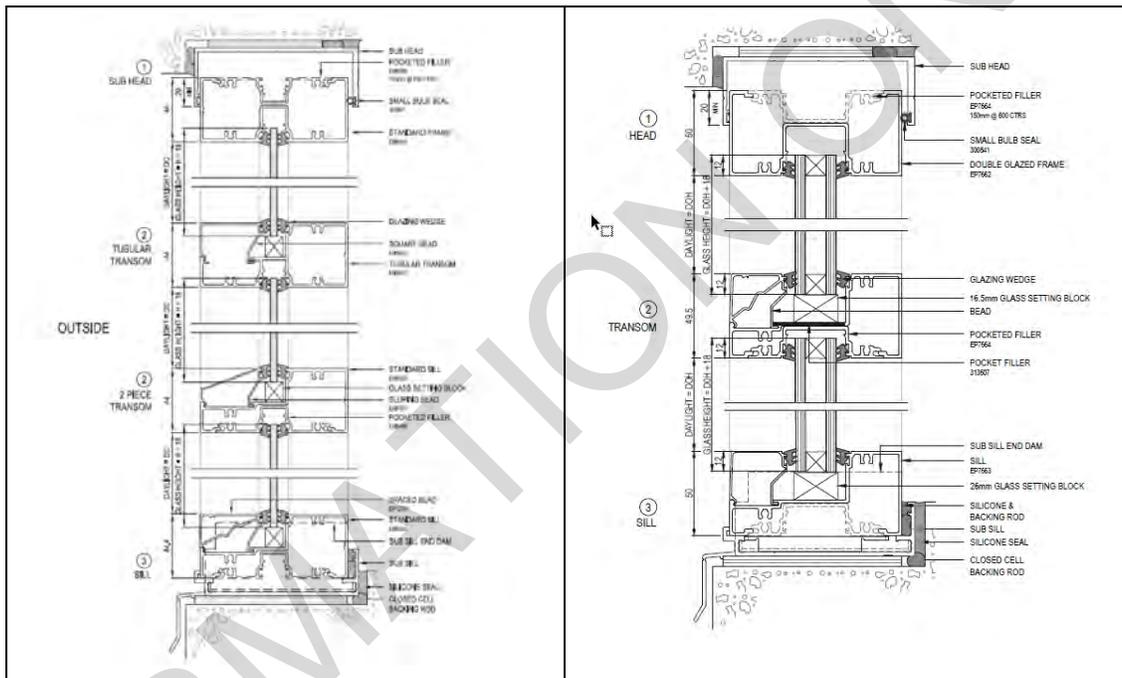


FIGURE 5.5 – CAPRAL 400 SERIES – SINGLE GLAZING

FIGURE 5.6 – CAPRAL 400 SERIES – DOUBLE GLAZING (425 SERIES)

## 7 Summary

The windows installed in the façade are of good quality and have been assessed as satisfactory overall. They exhibit appropriate material choices consistent with the building's design requirements, including the use of insulated glass units and durable aluminium framing systems. Installation workmanship appears to be sound, with window frames properly integrated into the structure, ensuring alignment and secure fixing.

Inspections revealed that the glazing and sealants are generally intact, providing effective weatherproofing and preventing water ingress in most cases. Apart from a couple of issues the seals between the glass and frames were found to be consistent and in good condition, contributing to the overall durability and thermal performance of the windows. There were no significant signs of damage, deterioration, or improper installation that would compromise their function.

Collectively, these factors indicate that the windows perform their intended roles effectively, providing adequate protection against environmental elements, contributing to occupant comfort, and maintaining the aesthetic quality of the façade. Any minor issues noted are isolated and do not detract from the overall performance of the window systems.

The investigation has revealed that the balustrades and privacy screens installed are inadequate and non-compliant for their intended application. Several critical issues were identified that undermine both the safety and performance of the system, including:

- 1. Glass Failure Under Load:**  
The glass panels used in the balustrades have been found to fail when subjected to certain load conditions. This raises significant safety concerns, as the balustrades are designed to act as protective barriers against falls. The failure indicates that either the glass specification or the installation method does not meet the required structural performance criteria.
- 2. Lack of Heat Soaking for Glass Panels Above 5 Metres:**  
For glass installed in balustrades located more than 5 metres above ground level—particularly those installed on boundary lines—there is no evidence that heat soaking was performed in accordance with AS 1288. Heat soaking is a critical process intended to reduce the risk of spontaneous glass breakage caused by nickel sulphide inclusions. The absence of this treatment suggests a potential for premature and unexpected glass failure, further compromising safety.
- 3. Excessive Deflection of Aluminium Stanchions:**  
The aluminium stanchions supporting the glass panels have been calculated to exhibit deflections exceeding the limits prescribed in relevant design standards. Excessive deflection can cause stress concentrations in the glass, reduce the overall rigidity of the balustrade system, and impair its ability to act as a reliable barrier. This structural inadequacy highlights deficiencies either in the original design or in the selection of materials and profiles used.
- 4. Glass Span:**  
In several instances, the span of the glass panels (between stanchions) exceeds the maximum limit of 1000 mm specified in the certified design drawings. This non-compliance with the certified design compromises the structural performance of the glass panels, as spans greater than 1000 mm for 6mm thick glass increases deflection and bending stresses under service and ultimate loads. Exceeding the specified span reduces the panel's ability to safely resist applied loads in accordance with AS1288 and the design requirements, thereby increasing the risk of glass fracture or failure.
- 5. Deviation from certified design:**  
Observations indicate that the installation of privacy screen base plates and handrails does not fully comply with the certified design documentation. Variations include differences in base plate positioning, anchorage, and handrail attachment methods relative to the approved drawings and certification. Such deviations may reduce the overall structural integrity and could affect the ability of the system to meet relevant load and safety requirements under the National Construction Code and associated Australian Standards.

Together, these issues confirm that the existing balustrades/screens do not meet mandatory compliance requirements and are not in accordance to the certified design. Remedial action, including redesign, specification review, and possible replacement of components, is recommended to ensure compliance with relevant codes and to protect occupants and users.

*"I have read the expert Witness Code of Conduct and agree to be bound by it."*

*"I have made all the enquiries that I believe are desirable and appropriate, and that no matters of significance which I regard as relevant, have, to my knowledge, been withheld from the Court."*



Chris Drzewucki 1/9/2025

INFORMATION ONLY

## Appendix A – Qualification of the Expert

### Façade Engineering

Chris Drzewucki

**Position:** Director

**Profession:** Façade Engineer

**Nationality:** Australian

#### Experience:

Chris has a depth of local and international experience which has allowed him to be at the forefront of glass and curtain wall development. He has worked alongside façade fabricators where Chris was able to develop his expertise of façade and curtain wall design.

In addition to management activities, he oversees many key projects and provides quality review and value design on others.

Chris has gained experience working on several large International structural glass projects. He has developed extensive knowledge in the design and installation of frameless structural glass systems including glass fins and tension glass walls.

His experience is hands-on from developing façade systems, to dealing with building owners, consultants and contractors in the design of façade systems. This has allowed him to understand the design and production side as well as on-site constructability and management of projects ensuring they run smoothly from design through to installation.

#### Professional Qualifications:

Bachelor of Engineering in Mechanical Engineering

Member of Institute Engineers Australia - NER

#### Field of Technical Competence:

- Glass Design
- Glass Wall Design
- Curtain Wall and Cladding System Design
- Façade Installation Quality Investigations
- Glass Manufacturer Quality Control and Testing
- Façade Defect Investigation & Rectification –
- Façade Water Ingress Investigation & Rectification –
- Tension Structure Design and Analysis
- Stone & Fixing Design
- Analysis of the behaviour of wind forces on buildings.

#### Professional Experience:

##### 2011 - Present: Facade Engineering Pty Ltd – Director

- Jewell Station – 17 Union Street – Brunswick – Heat Gain Thru Façade Investigation
- Hangar 82 – Essendon Airport – Heat Gain Thru Façade Investigation
- Mercy College – Coburg – Perforated Screen
- St Leonards Plaza – North Shore Line – Balustrade Design
- BK1 – Data Centre – Brooklyn – Curtainwall Design & Thermal Analysis
- IGLU – South Yarra – Spandrel Glass Defect
- Northern Hospital – Epping – Window Engineering Design & Thermal Analysis
- Latrobe Regional Hospital – Stage 3a – Traralgon – Window Engineering Design & Thermal Analysis
- Acaia Place – Broken Balustrade Investigation
- 600 Bourke Place – Glass Balustrade Engineering
- St John of God Extension - Curtainwall Engineering
- Aurora Recladding – Design & Engineering
- Casey Hospital Recladding - Design & Engineering
- Istana Broken Balustrade Investigation and Engineering Review
- Angliss Hospital Upgrade - Curtainwall Engineering
- Scape Windows – Window Engineering
- Piva Window Test Review
- Bolte Recreational Precinct – Thermal Performance Analysis & Glass Breakage Investigation
- Collins Square Tower 2 & 4 – Façade Installation Quality Investigation
- Chadstone Glass Balustrade Engineering
- 570 Bourke Street – Façade Installation Quality Investigation

- 700 Bourke Street – Façade Installation Quality Investigation
- 720 Bourke Street – Façade Installation Quality Investigation
- VUT – Land Title Office – Façade Tender Design
- Australian Catholic University – Façade Render Investigation
- Frankston Aquatic Centre – Curtainwall Engineering
- The Emerald Apartments – Curtainwall Engineering
- Vision Apartments – Curtainwall Engineering
- Marina Bay Financial Centre – Glass Investigation
- Mapletree Business Centre – Glass Investigation
- Lucas Films – Fusionpolis – Glass Investigation

**2006 – 2011: Meinhardt Façade Technology Pty Ltd – Associate**

- New Doha International Airport – Cable Glass Wall Design & Engineering
- Marina Bay – Integrated Resorts – Curved Sloped Glass Wall Design & Engineering
- Penrith Panthers Redevelopment
- Hunter Street – Glass Wall Design
- Hyundai Headquarters – Glass Wall Design
- 171 La Trobe Street Melbourne – Façade Remedial Works
- RMIT Building 222 – Façade Investigation and Remedial Works
- RMIT Building 202 – Façade Investigation and Remedial Works
- Neuroscience Research Facilities – Façade Consultancy
- Al Khail Tower – Façade Consultancy
- Perth Central Tafe – Façade Consultancy
- The Emporium – Façade consultancy
- Banks Apartments – Façade Consultancy
- 717 Bourke Street – Façade Consultancy
- Burj Khalifa – Engineering

**2004 – 2006: Meinhardt Façade Technology Singapore Pty Ltd – Façade Consultant**

- Changi Terminal 1 Upgrade – Façade Consultancy
- The Octagon – Remedial Works
- The Dubai Mall – Façade Consultancy
- HSBC – Reclad Design and Engineering
- Pickering Operation Centre – Façade Investigation
- Paragon - Glass Wall Design
- Between 2 Bridges – Cable Glass Wall Design
- Biopolis – Stone Design
- Museum Station – Glass Pool Design and Engineering
- Changi MRT 504 – Cable System Design
- Dubai Marina Mall Hotel – Façade Consultancy
- Mount Elizabeth Hospital – Façade Consultancy

**1999 – 2004: Australian Glass Assemblies Pty Ltd – Senior Design/Sales Engineer**

- Smyth's Toys Head Office – Cable Net Glass Wall
- Putrajaya Convention Centre – Glass Fin and Tension Truss Design
- Roches Stores – Tension Truss System Design
- Gallagher Head Office – Glass Fin System Design
- American Airlines Admiral Lounge – Glass Fin System Design
- 488 Almaden – Tension Truss System Design
- SCDF – Tension Truss System Design
- Breeze Shopping Centre – Glass Fin System Design

**1997 – 1999: Meinhardt Façade Technology Pty Ltd – Engineer Assistant**

**1993 – 1995: Façade Engineering Pty Ltd – Engineer Assistant**

**Appendix B – Balustrade / Screen Panels Inspected**

B1 Inspected	Width (mm)	Height (mm)	Qty
Ground Floor	238	1050	1
	430	1050	1
	480	1050	2
	860	1050	1
	1090	1050	7
	1150	1050	9
	1170	1050	1

B2 Inspected	Width (mm)	Height (mm)	Qty
Ground Floor	770	1700	3
	1050	1700	1
226	880	1700	2

B3 Inspected	Width (mm)	Height (mm)	Qty
124	1010	700	2
226	1113	700	2

INFORMATION ONLY

**Appendix C – Wind Load Analysis**

INFORMATION ONLY

## Wind Calculation

Project : 388 Murray Road

Location : Preston

The calculations are based on:

- (i) AS/NZS 1170.2:2011 "Structural design actions - Part 2: Wind actions"
- (ii) AS/NZS 1170.2:2002 "Structural design actions - Part 0: General principles"

### Dimension of building :

Average roof height : 17.28 m  
Length : 100 m  
Width : 75 m

### Calculation of wind actions:

The procedures for determining wind actions are as follows:

- (i) Site wind speeds
- (ii) Design wind speeds
- (iii) Design wind pressures

### Site wind speeds:

$$V_{sit,\beta} = V_R * M_d * M_{z,cat} * M_s * M_t$$

$V_R$  46 m/s Importance level 3  
Region A5

Site wind speed is based on design working life of 50 years

Annual probability of exceedance 1/1000

$M_d$  : The wind direction multiplier for region

Cardinal Directions	$M_d$
N	1.00
NE	0.85
E	0.80
SE	0.80
S	0.85
SW	0.90
W	1.00
NW	0.95

With an average height and the appropriate terrain category,  $M_{z,cat}$  is determined by AS/NZS 1170.2

Terrain Category = 2.5

$M_t$  and  $M_h$  is taken as 1.0

For all wind directions, site wind speeds are calculated in the following table.

Direction	Ter Cat.	$V_R$ (m/s)	$M_d$	$M_{z,cat}$	$M_s$	$M_t$	$V_{sit,\beta}$	
N	3.0	46	1.00	0.913	1.00	1.00	41.99	[m/s]
NE	3.0	46	0.85	0.913	1.00	1.00	35.69	[m/s]
E	3.0	46	0.80	0.913	1.00	1.00	33.59	[m/s]
SE	3.0	46	0.80	0.913	1.00	1.00	33.59	[m/s]
S	2.5	46	0.85	0.988	1.00	1.00	38.64	[m/s]
SW	2.5	46	0.90	0.988	1.00	1.00	40.91	[m/s]
W	2.5	46	1.00	0.988	1.00	1.00	45.46	[m/s]
NW	2.5	46	0.95	0.988	1.00	1.00	43.19	[m/s]

**Design Wind Speeds**

$V_{des, N\ wal} =$	43.19 m/s	$V_{des, NE\ wal} =$	41.99 m/s
$V_{des, E\ wal} =$	35.69 m/s	$V_{des, SE\ wal} =$	38.64 m/s
$V_{des, S\ wal} =$	40.91 m/s	$V_{des, SW\ wal} =$	45.46 m/s
$V_{des, W\ wal} =$	45.46 m/s	$V_{des, NW\ wal} =$	45.46 m/s

**CL 4.2 (AS/NZS: 1170.2:2011)**

Please refer to page 17 of AS/NZS 1170.2

**CL 5.3 (AS/NZS: 1170.2:2011)**

**Table 5.1 (A)**

Internal Pressure Coefficient

All wall equally permeable  $C_{p,i} = (-0.3, 0)$

**CL 5.4 (AS/NZS:1170.2:2011)**

External pressure coefficients

	$C_{p,e}$
Windward wall	0.70
Side wall	-0.65

**Maximum Positive Wind Pressure 1.67 kPa**

**Maximum Negative Wind Pressure -1.61 kPa**

**Table 5.6 (AS/NZS 1170.2:2011)**

Local Pressure Factor

For negative wind pressure

Proximity to edge	Local Factor
< 0.5 a	2.0
< a	1.5
> a	1.0

For positive wind pressure

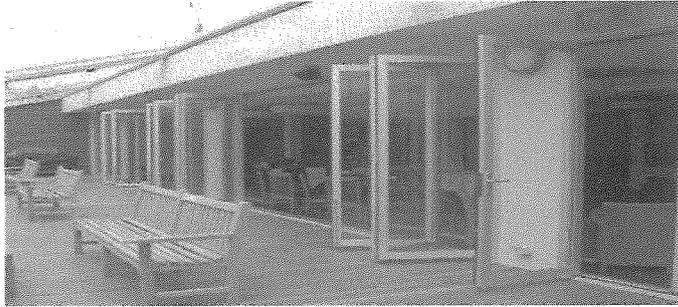
Proximity to edge	Local Factor
Anywhere	1.5

Note: a is the minimum of 0.2b or 0.2d or h (average height of building)



**Appendix D – Glazing Certificates**

INFORMATION ONLY



**B O N D S**  
**Windows & Doors**  
**Pty Ltd**

ACN: 132 113 430

ABN:75 132 113 430

DATE: 29/09/2015

Factory 1, 34 Glenbarry Road  
Campbellfield VIC 3061  
Phone 03 9357 5799 Fax 03 9357 5789  
Mob: 0411 803 291 0421 336 895  
Email: [info@bondswindows.com.au](mailto:info@bondswindows.com.au)  
[www.bondswindows.com.au](http://www.bondswindows.com.au)

To:

Chris,

This letter is to certify that all aluminum windows & doors, manufactured and glazed by Bonds Windows and Doors P/L to job address 388 Murray Road Preston is in accordance with Australian Standards AS1288-2006 - Glass in Building and AS2047-1999 - Windows in Buildings.

Should you have any queries please do not hesitate to phone our office.

Signed By \_\_\_\_\_

An Authorized Officer representing Bond's Windows and Door Pty Ltd

Glazing Certificate

**GLAZING COMPLIANCE CERTIFICATE**

**PART A - MANUFACTURER'S CERTIFICATION**

As the balustrade and privacy screen manufacturer, I certify that the glass used on the balcony balustrades and privacy screens, supplied to:

Murray Rd Developments, 388 Murray Road, Preston

And delivered on 5/10/15

have been manufactured to comply with:

**AS 1288** Glass in buildings – Selection and installation. Including human impact requirements.

Toughening certification also supplied. Glass used 6mm Toughened, Acid Etched

MICHAEL BERG  
GENERAL MANAGER



5/10/15

**PART B - INSTALLER'S CERTIFICATION**

As the principal installer, I certify that glass balustrades and privacy screens, including all supplied glazing requiring human impact safety, has been installed in accordance with the provisions of Part 3.6 of the Building Code of Australia.

Michael Berg  
Name of Installer



Signature

5/10/15  
Date

# A.M. DESIGN & CONSTRUCTION PTY LTD

CIVIL & STRUCTURAL ENGINEERS: ABN: 16 055 903 181

BUILDING ACT 1993  
BUILDING REGULATIONS 2006  
Regulation 1507

## CERTIFICATE OF COMPLIANCE- DESIGN

To Relevant Building Surveyor:

From Building Practitioner:

Aldo Di Tonto  
Category / Class Engineer (Civil)  
A.M. Design & Construction Pty Ltd  
152 Bell Street Coburg Vic. 3058

Property Details: **368-390 MURRAY ROAD PRESTON: Balustrades**

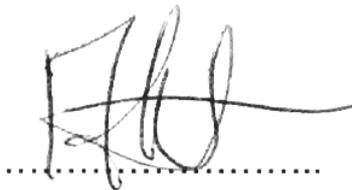
### COMPLIANCE:

I did NOT prepare the glazed balustrade design but have reviewed and certify it as complying with Section B, of the National Construction Code 2015 and the following relevant Standards

AS/NZ. 1170.0 Part 0: General principles  
AS/NZ. 1170.1 Part 1: Permanent, imposed and other actions  
AS/NZ. 1170.2 Part 2: Wind forces  
A.S. 3600 Concrete Structures code  
A.S. 4100 Steel Structures code

### DESIGN DOCUMENTS:

Structural drawings  
18474-S01 Rev A, 18474-S05 Rev A (Both dated 1/12/2015)  
Prepared by: Clive Steele Partners Pty Ltd Consulting Engineers



Signature

Registration no. **EC – 2151** Category / Class **Civil Engineer**  
Signed building practitioner. **Aldo Di Tonto B.E (Civil), M.I.E (Aust), C.P Eng**  
Dated this 4<sup>th</sup> day of December 2015

# **B M A Concepts Pty Ltd**

ABN 13 161 177 242

14a Lieber Grove, Carrum Downs VIC 3201

TEL: 03 9708 2935 Email: admin@bmaconcepts.com.au

To: Murray Road Developments  
Cnr Murray Road & Spring Street  
Preston VIC

24/11/15

## **COMPLIANCE CERTIFICATE - BALUSTRADES**

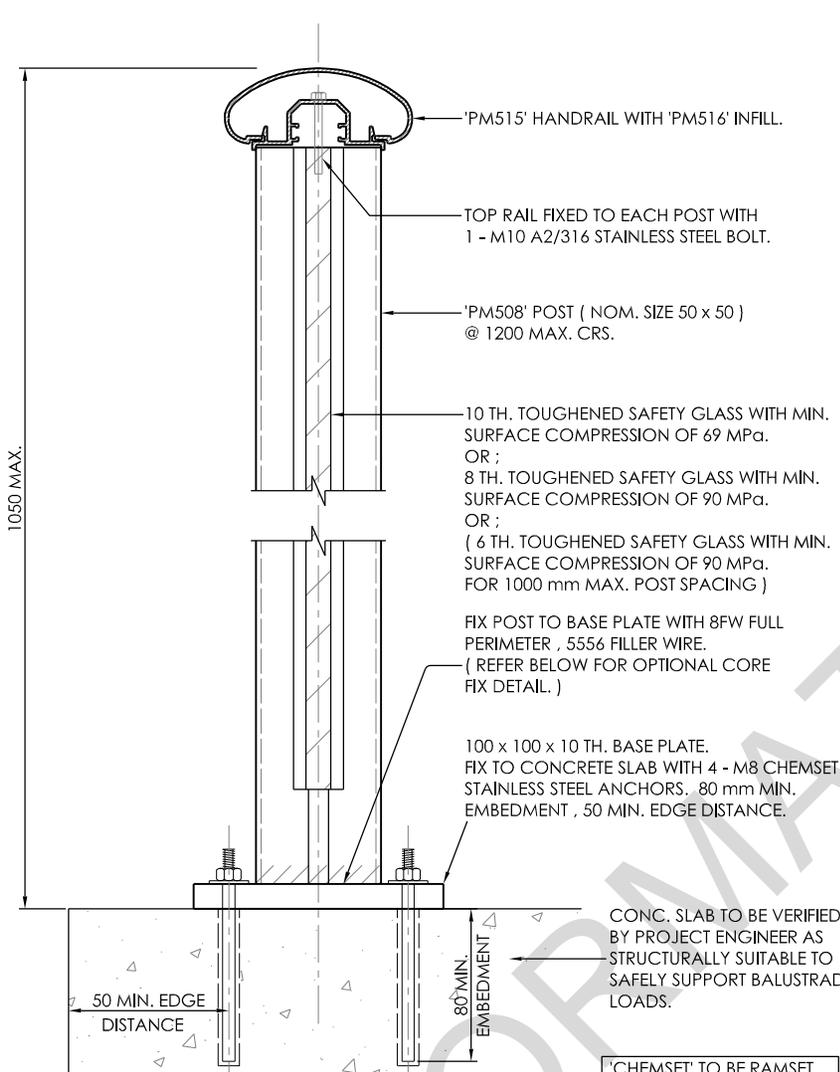
We certify that the the aluminium framed glass balustrades install on this site were done so as per the engineering certificates supplied.

All fixing points were onto concrete slab and precast concrete walls, and fixing was with 8mm stainless steel studs (4 for each post) that were chemset into the concrete.

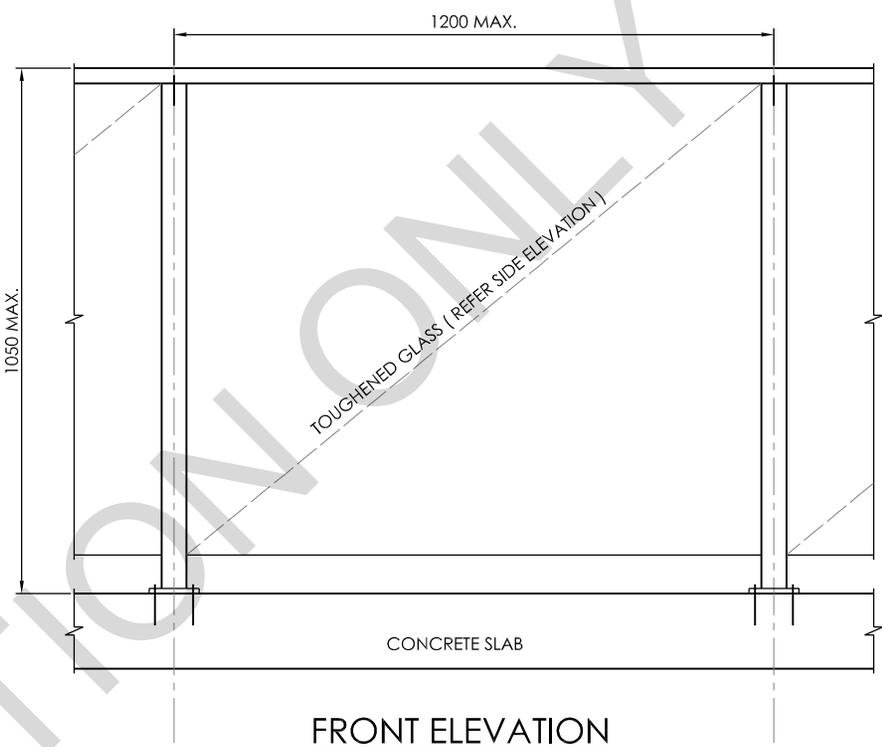
Glazing was in accordance with AS 1288, and a glazing certificate was issued.



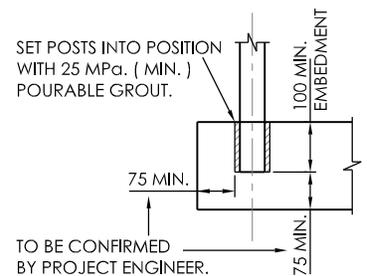
Michael Berg  
General Manager



**SIDE ELEVATION**  
( SCALE 1:2 )



**FRONT ELEVATION**  
( SCALE 1:10 )



**OPTIONAL CORE FIX DETAIL**  
( SCALE 1:10 )

NOTE: ADDITIONAL REQUIREMENTS FOR TOUGHENED SAFETY GLASS ARE REQUIRED WHERE BALUSTRADE IS MORE THAN 5 METRES ABOVE FLOOR / GROUND. REFER AS 1288 / AMDT 2 / 2011-11-11, CLAUSE 3.8

NOTE: ALL ALUMINIUM TO BE 6005A - T5 GRADE U.N.O. ALL FIXINGS TO BE A4/316 STAINLESS STEEL U.N.O.

DESIGNED FOR C3 CLASSIFICATION BARRIER IN ACCORDANCE WITH AS 1170.1  
 DESIGN HORIZONTAL LIVE LOAD = 0.75 kN/m  
 DESIGN INFILL LIVE LOAD = 1.0 kPa  
 DESIGNED FOR WIND IN ACCORDANCE WITH AS.1170.2 WIND REGION A , TERRAIN CATEGORY 2  
 MAX. BUILDING HEIGHT ≤ 75 m

REV	COMMENTS	DATE
A	ISSUED FOR CONSTRUCTION	01/12/15

**AS BUILT DRAWING**  
**BUILDING PERMIT**  
**BS-U 1111-007055-4**

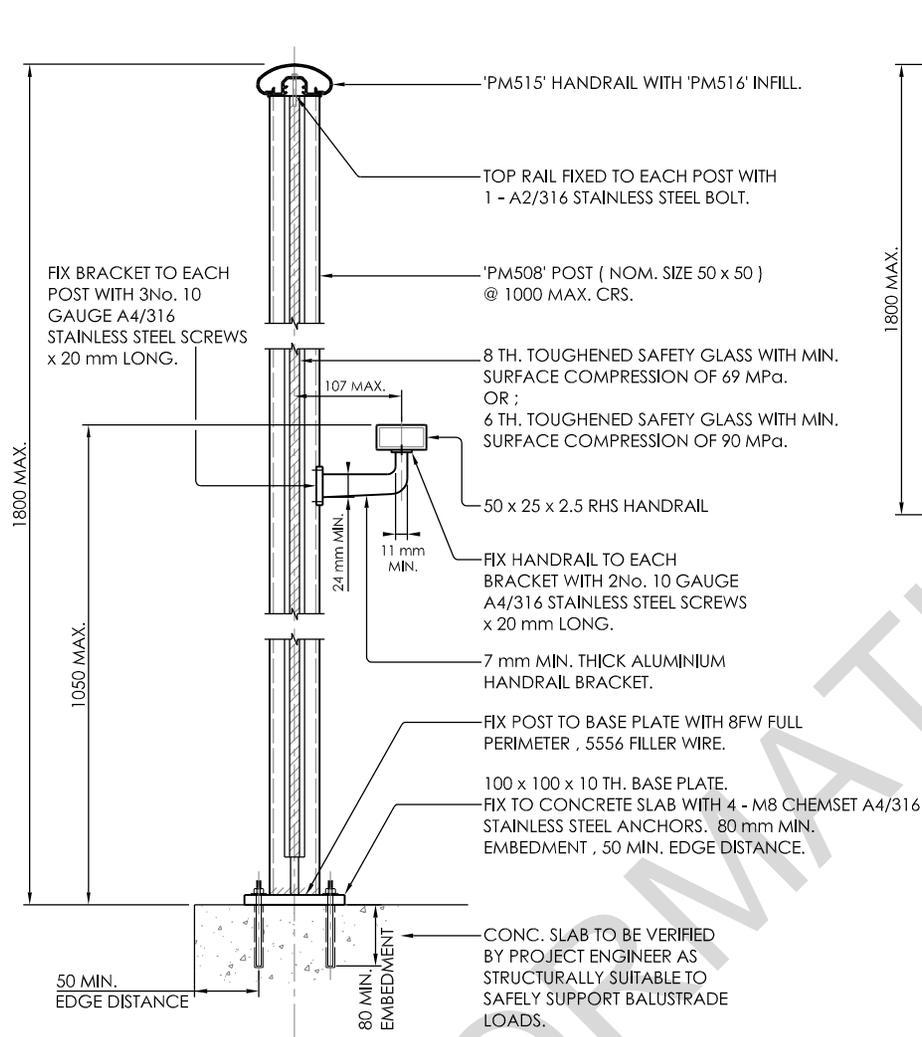
<b>BMA CONCEPTS</b> PTY LTD BALUSTRADING AND POOL FENCING SPECIALISTS 1/14 LIEBER GROVE , CARRUM DOWNS VIC. 3201 PH. 03 9708 2935 MOB. 0448 178 984	
DESIGNED C.V.	DATE NOV '15
DRAWN AB	SCALE 12,110
REF No	ROLL No.

**CLIVE STEELE PARTNERS** PTY LTD  
CONSULTING ENGINEERS - STRUCTURAL & CIVIL

**CSP**

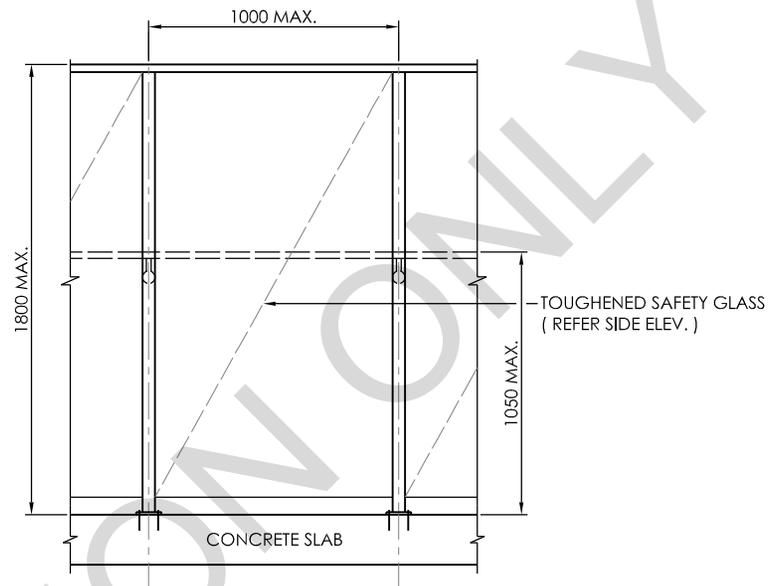
BUILDING 6  
62/195 WELLINGTON ROAD  
CLAYTON, VICTORIA  
AUSTRALIA. 3168  
Telephone (03) 9545 0223  
Facsimile (03) 9545 3022  
Email csp@clivesteele.com.au  
A.C.N. 005 363 735 A.B.N. 92 627 427 761

<b>GLAZED BALUSTRADE</b> ( 1050 MAX. BALUSTRADE HEIGHT )	REV. A
CONCRETE MOUNT	
DRG. No. 18474 - S01	



**SIDE ELEVATION**  
( SCALE 1:5 )

'CHEMSET' TO BE RAMSET 800 SERIES OR EQUIVALENT N32 MIN. CONC. GRADE.



**FRONT ELEVATION**  
( SCALE 1:20 )

NOTE: ADDITIONAL REQUIREMENTS FOR TOUGHENED SAFETY GLASS ARE REQUIRED WHERE BALUSTRADE IS MORE THAN 5 METRES ABOVE FLOOR / GROUND. REFER AS 1288 / AMDT 2 / 2011-11-11, CLAUSE 3.8

NOTE: ALL ALUMINIUM TO BE 6005A-T5 GRADE U.N.O. ALL FIXINGS TO BE A4/316 STAINLESS STEEL U.N.O.

DESIGNED FOR C3 CLASSIFICATION BARRIER IN ACCORDANCE WITH AS 1170.1  
 DESIGN HORIZONTAL LIVE LOAD = 0.75 kN/m  
 DESIGN INFILL LIVE LOAD = 1.0 kPa  
 DESIGNED FOR WIND IN ACCORDANCE WITH AS 1170.2  
 WIND REGION A , TERRAIN CATEGORY 3  
 MAX. BUILDING HEIGHT ≤ 10 m

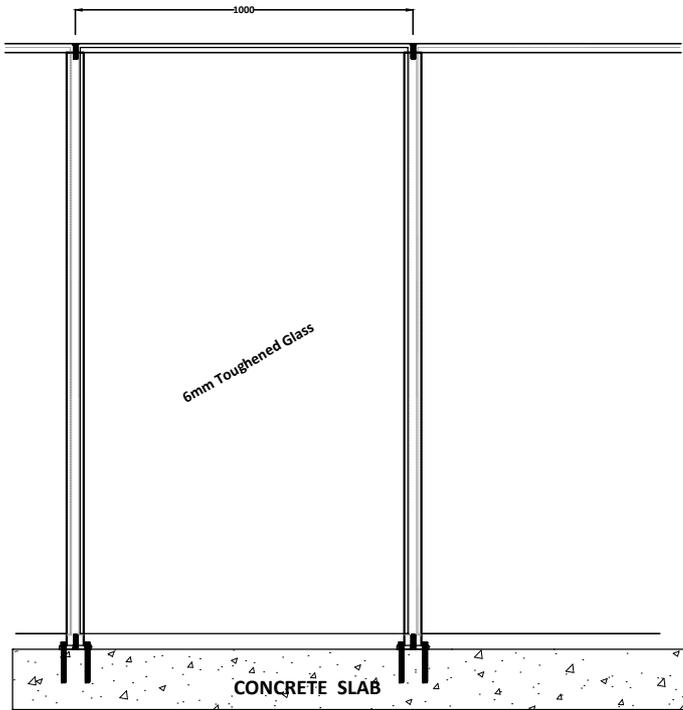
REV	COMMENTS	DATE
A	ISSUED FOR CONSTRUCTION	01.12.15

**AS BUILT DRAWING**  
**BUILDING PERMIT**  
**BS-U 1111-007055-4**

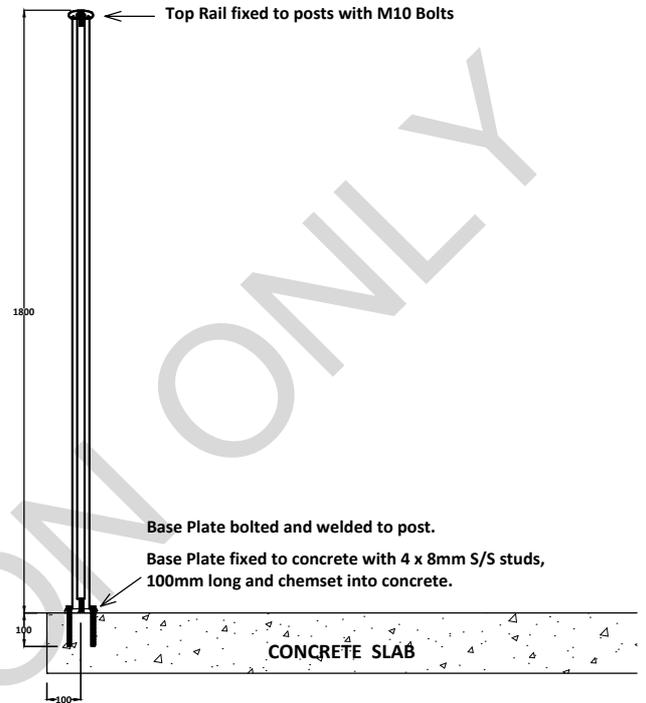


<b>BMA CONCEPTS</b> PTY LTD BALUSTADING AND POOL FENCING SPECIALISTS 1/14 LIEBER GROVE , CARRUM DOWNS VIC. 3201 PH. 03 9708 2935 MOB. 0448 178 984		<b>CLIVE STEELE PARTNERS</b> PTY LTD CONSULTING ENGINEERS - STRUCTURAL & CIVIL BUILDING 6 62/195 WELLINGTON ROAD CLAYTON, VICTORIA AUSTRALIA. 3168 Telephone (03) 9545 0223 Facsimile (03) 9545 3022 Email csp@clivesteele.com.au A.C.N. 005 363 735 A.B.N. 92 627 427 761		<b>GLAZED BALUSTRADE</b> ( 1800 MAX. BALUSTRADE HEIGHT ) - CONCRETE MOUNT	
DESIGNED	C.V.	DATE	NOV. 15	DRG. No.	18474 - S05
DRAWN	AB	SCALE	15,120	REV.	A
REF No		ROLL No.			

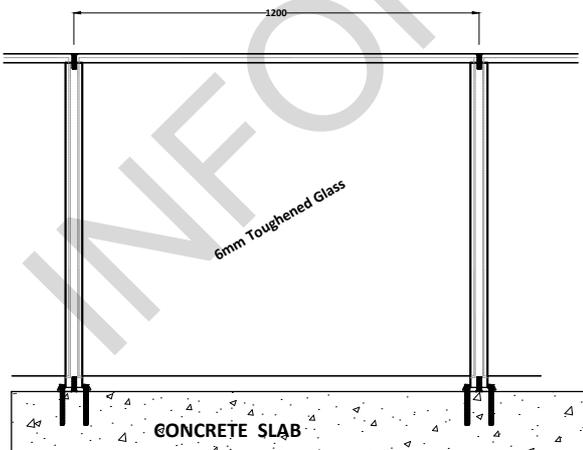
**FRONT ELEVATION**



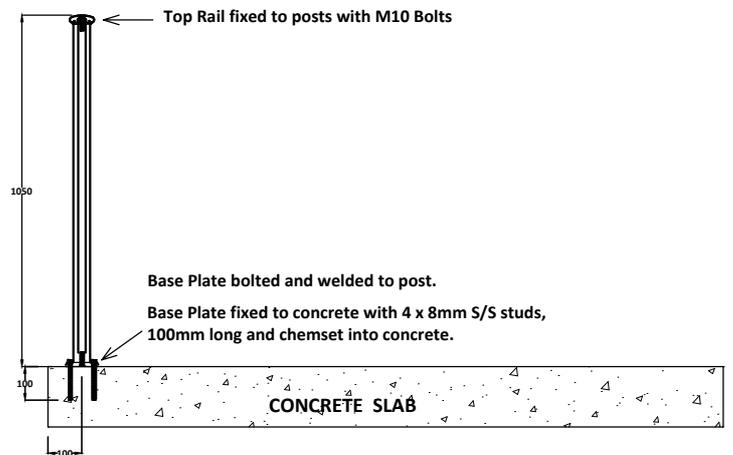
**SIDE ELEVATION**



**FRONT ELEVATION**



**SIDE ELEVATION**



**Appendix E – Technical Information**

INFORMATION ONLY

**TABLE 3.3**  
**MINIMUM IMPOSED ACTIONS FOR BARRIERS**

Type of occupancy for part of the building or structure	Specific uses	Top edge			Infill	
		Horizontal kN/m	Vertical kN/m	Inwards, outwards or downwards kN	Horizontal kPa	Any direction (see Note 2) kN
<b>A</b> Domestic and residential activities	All areas within or serving exclusively one dwelling including stairs, landings, etc. but excluding external balconies and edges of roofs (see C3)	0.35	0.35	0.6	0.5	0.25
	Other residential, (see also C)	0.75	0.75	0.6	1.0	0.5
<b>B, E</b> Offices and work areas not included elsewhere including storage areas	Light access stairs and gangways not more than 600 mm wide	0.22	0.22	0.6	N/A	N/A
	Fixed platforms, walkways, stairways and ladders for access (see Note 1)	0.35	0.35	0.6	N/A	N/A
	Areas not susceptible to overcrowding in office and institutional buildings also industrial and storage buildings	0.75	0.75	0.6	1.0	0.5
<b>C</b> Areas where people may congregate						
<b>C1/C2</b> Areas with tables or fixed seating	Areas with fixed seating adjacent to a balustrade, restaurants, bars, etc.	1.5	0.75	0.6	1.5	1.5
<b>C3</b> Areas without obstacles for moving people and not susceptible to over-crowding	Stairs, landings, external balconies, edges of roofs, etc.	0.75	0.75	0.6	1.0	0.5
<b>C5</b> Areas susceptible to over-crowding	Theatres, cinemas, grandstands, discotheques, bars, auditoria, shopping malls (see also D), assembly areas, studios, etc.	3.0	0.75	0.6	1.5	1.5
<b>D</b> Retail areas	All retail areas including public areas of banks/building societies, (see C5 for areas where overcrowding may occur)	1.5	0.75	0.6	1.5	1.5

(continued)

**Appendix F – Brief to Expert**

INFORMATION ONLY

3 March 2025

Chris Drzewucki  
Façade Engineering Pty Ltd  
35 Nerissa Grove  
OAK PARK VIC 3046

**Lawyer** Jessica Xu  
**Direct Line** (03) 9321 9933  
**Email** jessica.xu@holdingredlich.com  
**Partner** Lachlan Ingram  
**Our Ref** JFX 19480961

**By email** chris@facadeengineering.com.au

***Confidential and subject to legal professional privilege***

Dear Mr Drzewucki

**Owners Corporation 1 on PS 733538P  
388 Murray Road, Preston  
Retainer of Chris Drzewucki**

1. We act for Owners Corporation 1 on Plan of Subdivision 733538P (**Owners Corporation**), being the owners corporation for 388 Murray Road, Preston (**Property**).
2. We are instructed by the Owners Corporation to retain you as an independent expert to prepare a report on:
  - (a) the glass balustrades at the Property; and
  - (b) the windows installed at the Property, particularly on the higher floors of the building.
3. Your report may be used as evidence in legal proceedings.

**Background**

4. The Property is a six-storey residential complex with 133 apartments, associated common property and a common property basement car park.
5. The plan of subdivision for the Property is located at **Tab 2** of your brief.
6. Copies of the following documents relating to the construction of the Property are located at **Tab 3** of your brief:
  - (a) building permits for stages 1-4 of construction (**Building Permits**);
  - (b) stamped architectural specifications;
  - (c) stamped architectural drawings;
  - (d) stamped structural drawings;

- (e) stamped fire engineering report (**FER**); and
  - (f) occupancy permit dated 4 December 2015 (**Occupancy Permit**).
7. With respect to the construction of the Property:
- (a) the planning permit was issued on 12 October 2010;
  - (b) the Property was built between October 2013 and December 2015 by Mr Chris Potiriadis and Mr Joseph Salvo and/or companies associated with Messrs Potiriadis and Salvo, being Jopsal Pty Ltd and CLP Electrics Pty Ltd (**Builders**). We understand that the Builders were engaged by the developer, Murray Rd Developments Pty Ltd, of which Messrs Potiriadis and Salvo were directors; and
  - (c) the other relevant persons involved in the build were:
    - (i) Gary Dean of Reddo Pty Ltd, engaged as the Building Surveyor;
    - (ii) CHT Architects Pty Ltd, engaged as the Architect; and
    - (iii) Garry Weir of Razzi Weir Group Unit Trust trading as RAW Fire Safety Engineering, engaged as the Fire Engineer.
8. In September 2021, building consultant Jeff Beck of JWB & Associates prepared a building report on the Property. A copy of this report is located at **Tab 4** of your brief.
9. In April 2023, glass contractor Jason Ah-Young of Maison Glass & Aluminium prepared a brief report on the balustrades at the Property following an incident where one of the glass panels shattered. A copy of this report is located at **Tab 5** of your brief.
10. Following a letter from us in August 2024, the solicitor of one of the builder entities has provided comments on the installation of the glass from Mr Dean and the original installation contractors, BMA Concepts. A copy of this correspondence is located at **Tab 6** of your brief.
11. Mr Beck was retained in late 2024 to prepare a supplementary report on the Property. In the course of his engagement, he has recommended the engagement of a façade engineer to investigate the quality and adequacy of the windows installed at the Property, particularly on the higher floors of the building. We understand that there may be concerns with water ingress through the seals of the windows and façades of the building.
12. Please tell us if you require any further documents for your response to this brief.

### **Your responsibilities as an expert witness**

13. As you are aware, your role is that of an independent expert, and not an advocate for any party. Although you are retained by the Owners Corporation, you are retained as an independent expert to potentially assist the County Court. Your overriding duty is to the Court. The Court expects you to be objective, professional and to form an independent view about the matters on which your opinion is sought.
14. Please read “Form 44A – Expert Witness Code of Conduct” of the *County Court Civil Procedure Rules 2018* (**Expert Witness Code of Conduct**) carefully and ensure that you comply with it. A copy of the Expert Witness Code of Conduct is at **Tab 1** of your brief.

15. As required by the Expert Witness Code of Conduct, your report must give details of your qualifications, and of the literature, documents and other material used in providing the report. All facts and assumptions on which your opinion is based should be clearly and fully stated. You should not avoid considering material facts, regardless of the impact your concluded opinion may have in the proceedings.
16. Your report should be clear and unambiguous. You should give reasons for each opinion. Where appropriate, you should also clearly state the methodology you have used in reaching your conclusions. The report should also be accompanied by clear copies of any photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter to which the report refers.
17. Until your report is in its final form, it should not be signed. You should, however, be aware that unsigned draft reports may need to be disclosed to other parties to a proceeding. If, after exchange of reports prepared by the other parties or at any other stage, you change your view on a particular matter for any reason, you should inform us in writing of the change of view without delay, including the reasons for the change.
18. If, for any reason, you consider that your opinion is not properly researched because of insufficient data, or for any other reason, you should state clearly that your opinion is provisional. Similarly, if you believe your opinion to be incomplete or inaccurate without some qualification, that qualification must be stated in your report.
19. You should make it clear if a particular question or issue falls outside your area of expertise.
20. Your report should conclude with the following statement and declaration:

*"I, [insert], of [insert], acknowledge that I have read the Code of Conduct for expert witnesses in proceedings in the County Court and I have made all the inquiries which I believe are desirable and appropriate, (save for any matters identified explicitly in the report) and that no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Court."*

## Retainer

### Your brief

21. You are engaged to:
  - (a) review the documents provided to you in this brief;
  - (b) inspect the Property and relevant private apartments (where access can be provided), for the purposes of carrying out necessary investigations to prepare the requested report described below; and
  - (c) having regard to:
    - (i) the building design; and
    - (ii) the *Building Act 1993* (**Building Act**), the *Building Regulations 2018* (**Building Regulations**), the Building Code of Australia (**Code**) and any relevant Australian Standards at the time of the issue of the Building Permits,

prepare a report which sets out your opinion on whether:

- (iii) the design of the glass balustrades at the Property are compliant with the design documentation and the appropriate standards at the time of installation;
  - (iv) the glass balustrades have been installed appropriately;
  - (v) the design of the windows at the Property are compliant with the design documentation and the appropriate standards at the time of installation; and
  - (vi) the windows installed, particularly on the higher floors of the building, are of adequate quality and installed appropriately.
22. The Owners Corporation has not commenced any legal proceedings yet, but they may decide to do so. Accordingly, in addition to the terms of this letter, your retainer is governed by the Expert Witness Code of Conduct. You must comply with the Expert Witness Code of Conduct in undertaking your work and providing your report, and in preparation for giving evidence before the Court, if that is required.
23. From time to time, we may also require you to respond to additional evidence or expert opinions if and when received from other parties. You may need to be available to give evidence at the Court, or another Victorian court, a tribunal, or other statutory decision-maker, at some time during the course of your retainer.

#### **Confidentiality**

24. Your independent expert report and any drafts prepared in accordance with your retainer are confidential and are not to be copied or used for any purpose unrelated to the retainer without the permission of the Owners Corporation.
25. Similarly, all material supplied to you by Holding Redlich is confidential and must not be copied or used for any purpose unrelated to your retainer without the permission of the Owners Corporation.
26. Your report and any draft reports should have the following words inserted on the cover page:

***This document is protected by legal professional privilege. To ensure that privilege is not waived, please keep this document confidential and in a secure place. This document should not be distributed, nor any reference to it made, to any person not directly involved in making decisions on the subject matter of this document. If this document is requested by a government officer, please do not show it to or discuss its contents with the officer, but contact Holding Redlich immediately to ensure that privilege is claimed over the document.***

27. You, and your staff, may also be requested to sign a deed of confidentiality, if you are required to review documents provided by the other parties on a confidential basis.
28. You may be required to return all documents, copies and workings at the end of your retainer.

#### **Conflicts of interest**

29. As an independent expert, it is important that you are free from any possible conflict of interest in the provision of your advice. You should ensure that you have no connection with any party to the proceedings which would prevent you from providing your opinion in an objective and independent manner.
30. Please confirm that you have no conflict involving any of the parties listed in paragraph 7.

31. If any conflict or potential conflict becomes apparent to you during your work on this matter, please tell us immediately.

**Fees**

32. Prior to proceeding with any work under this brief, please provide a fee estimate for the preparation of a Court-compliant expert report so we can obtain instructions from the Owners Corporation.
33. If you become aware that your estimate is likely to alter in any material way, please notify us immediately so we can obtain approval for any material cost increase.
34. Your expenses such as taxis, parking, couriers, printing etc should be billed at cost.
35. The Owners Corporation is your client and is responsible for payment of your reasonable fees, although for administrative purposes, we ask that your accounts be addressed to our office.

**Communications**

36. Please direct all communications, whether verbal or written, to our office so that we can coordinate all activities in connection with the anticipated proceeding and ensure privilege is maintained as appropriate.
37. If you have any questions or comments about this assignment, please contact Jessica Xu above, or Lachlan Ingram at (03) 9321 9709 or [Lachlan.Ingram@holdingredlich.com](mailto:Lachlan.Ingram@holdingredlich.com).

Yours sincerely

*Holding Redlich*

**Holding Redlich**

## Index of Documents

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Tab No.	Description
1.	Form 44A - Expert Witness Code of Conduct.pdf
2.	Plan of Subdivision.pdf
3.	Construction
	<i>Building Permits</i>
	<i>Plans</i>
	<i>Certificate of Occupancy.pdf</i>
	<i>Fire Engineering Report - RawFire.pdf</i>
4.	JWB & Associates Report.pdf
5.	Maison Glass & Aluminium Report.pdf
6.	FW 388 Murray Rd Preston - alleged glass balustrade defects.msg

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Level 21, 150 Lonsdale Street  
Melbourne VIC 3000

GPO 3208, Melbourne VIC 3001

## Certificate of Currency

### CHU Residential Strata Insurance Plan

<b>Policy No</b>	<b>HU0006118618</b>
<b>Policy Wording</b>	CHU RESIDENTIAL STRATA INSURANCE PLAN
<b>Period of Insurance</b>	09/06/2025 to 09/12/2025 at 4:00pm
<b>The Insured</b>	OWNERS CORPORATION PLAN NO. PS 733538
<b>Situation</b>	388 MURRAY ROAD PRESTON VIC 3072

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#### Policies Selected

##### Policy 1 – Insured Property

Building: \$71,710,000  
Common Area Contents: \$717,100  
Loss of Rent & Temporary Accommodation (total payable): \$10,756,500

##### Policy 2 – Liability to Others

Sum Insured: \$20,000,000

##### Policy 3 – Voluntary Workers

Death: \$200,000  
Total Disablement: \$2,000 per week

##### Policy 4 – Fidelity Guarantee

Sum Insured: \$100,000

##### Policy 5 – Office Bearers' Legal Liability

Sum Insured: \$1,000,000

##### Policy 6 – Machinery Breakdown

Sum Insured: \$100,000

##### Policy 7 – Catastrophe Insurance

Not Selected

##### Policy 8 – Government Audit Costs and Legal Expenses

Government Audit Costs: \$25,000  
Appeal expenses – common property health & safety breaches: \$100,000  
Legal Defence Expenses: \$50,000

##### Policy 9 – Lot owners' fixtures and improvements (per lot)



Sum Insured: \$250,000

**Flood Cover is included.**

Date Printed

28/05/2025

This certificate confirms this policy is in force for the Period of Insurance shown, subject to the policy terms, conditions and exclusions. It is a summary of cover only (for full details refer to the current policy wording QM562-1023 and schedule). It does not alter, amend or extend the policy. This information is current only at the date of printing.

INFORMATION ONLY

DATED

2025

**MARIE STACEY KOVACEVIC**

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**CONTRACT OF SALE OF REAL ESTATE**

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**Property: 102/388 Murray Road, Preston 3072**

**MELBOURNE REAL ESTATE CONVEYANCING PTY LTD**

Licensed Conveyancer

954 High Street Reservoir Vic 3073

Tel: 9464 6732

Ref: JK:25/4042JK