



## Forensic Water Leak Investigation Report

1 Sample Street, Melbourne VIC 3000 (PS XXXXXXA)

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- ✓ Our quality reports Make Roscon the number #1 choice
- ✓ We conduct onsite audits including photos, not desktop audits
- ✓ ISO 9001 Accredited Systems & Procedures
- ✓ Member - MBAV Platinum Master Builder (5630)
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## Roscon Property Services

Roscon Property Services is the first property services provider to introduce central streamlined systems integrating property services and quality controlled reporting services accredited by International Certifications, dedicated to support Owners Corporation managers.

Since 1987 we have evolved from our history of developing and constructing prestigious residential and high profile commercial/ industrial landmark projects. We have extended our service capabilities through our extensive construction, strata management and professional property services experience, and filled the void between three property industries.

Built on solid foundations our clients rest assured in the comfort of knowing they're supported by Registered Building Practitioners, qualified professionals, fully insured and committed in protecting their responsibility to valued clients.

## Mission Statement

"It is the policy of Roscon Property Services to deliver property solutions to its clients in the most efficient and timely manner while respecting legal and statutory requirements. Roscon Property Services Pty Ltd operates under ISO 9001-2015 in the completion of its services. All staff & sub-contractors are expected to work according to our policies and procedures. The system employed by Roscon Property Services Pty Ltd is reviewed annually in order to ensure its consistency".

## Instructed By

<b>Name</b>	Owner Corporation Manager
<b>Company</b>	Owners Corporation
<b>Address</b>	XXX

## Inspected & Compiled by

Action	Name	Date
Prepared By	Senior Forensic Engineers	01/01/2024
Inspected By	Senior Forensic Engineers	01/01/2024
Reviewed By	Reporting Manager	01/01/2024
Approved By	Director	01/01/2024
On Behalf Of	Roscon Property Services	

01/01/2024

Dear OC Manager,

Thank you for using Roscon Property Services Pty Ltd for your Forensic Water Leak Investigation Report. I have attached a copy of the report that has been compiled by an experienced auditor.

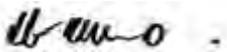
Should you require further assistance or need clarification of anything that is contained within the report then please do not hesitate to contact us.

The attached report includes the following:

<b>Part 1</b>	Inspection Notes
<b>Part 2</b>	Detailed Defect Report
<b>Part 3</b>	Discussion.
<b>Part 4</b>	Recommendations
<b>Part 5</b>	Terms & Conditions

The team at Roscon Property Services are available to assist you with any rectification concern that may eventuate and look forward to your call. Thank you for your continued business.

Yours Sincerely  
**Roscon Property Services Pty Ltd**



**Paul Cummaudo**

Director

VIC, Licensed Estate Agent, REMC  
VIC, Registered Building Practitioner VBA - DB-U 13329, CB-U 4272  
NSW, Builders Contractor Licence 294038C, Supervisor Certificate 77390S  
QLD, Builder Open - No: 15116625  
Member AREI, REIV, MBAV, MAIPM, SCA

## Part 1: Inspection Notes

Roscon Property Services was engaged by Owners Corporation, to undertake a Forensic Water Leak Investigation Report, on behalf of the Owners Corporation, at 1 Sample Street, Melbourne VIC 3000. The investigation was undertaken on Tuesday 01/01/2024 at approximately 9:30 am. The purpose of the investigation was to determine the source of the water leaks into Unit 18 and Unit 17, directly below.

The main leak investigated at the property was in the ceiling on Level 1 in South-East corner of Unit 18. The area above the leak is the level 2 balcony of Unit 18. It is Roscon's understanding that this leak has been active since 2017 and at least two formal investigations have taken place in order to identify the source of the ingress. The first one found the following:

"[...]

*Directly above the living room ceiling is the balcony area of above bedroom, we have inspected and tested this area in particular around the posts of roof support and have been able to confirm that the waterproofing beneath this area has failed, we have used tracing dye and floor testing to confirm this.*

[...]"

The second one carried out on the 31/01/22 concluded the following:  
"Water is leaking from the neighboring balcony wall and window frame.

1. At the expansion joint there is a large hole just above the tap fitting.
2. The rendered covers protecting the recessed bolted plates connecting the two walls have detached.
3. The window frame has large gap on the upright'.

Additionally, based on conversations had with the residents of Unit 18, it is Roscon's understanding that despite the above result's of the former reports, the balcony had been flood tested in the past and the leak did not become active. Approximately 8 years ago works had been undertaken on this balcony, to address issues pertaining to incorrect/insufficient falls, which involved the application of a new finish surface to the general balcony area. Unfortunately, staining is still present on the balcony.

Similarly, below the aforementioned leak, the Ground Level ceiling of Unit 17 had also been subject to widespread water damage. The leak is situated just below the internal side of Unit 18's balcony above. The residents of unit 17 expressed that since the roof rectification works took place in 2023 the severity of the leak had greatly reduced; although the resident was still concerned that the staining in the ceiling had spread.

**The Following areas were inspected for the purpose of the investigation:**

- **Unit 18**
  - Level 1 - Balcony
  - Level 1 - Living Area
  - Level 2 - Balcony
- **Unit 19**
  - Ground - Living Area
  - Ground - Study
  - Ground - Courtyard
- **Rooftop**

The following Forensic Water Leak Investigation Report provides a detailed summary of all findings identified during the inspection of the property. All recommended rectification works are brief in nature and should be planned in much greater detail prior to being carried out. Additionally, any works to be completed should be done in accordance with the current NCC, Australian Standards, the Guide to Standards and Tolerances and all other relevant building codes and regulations.

SAMPLE REPORT

## Part 2: Detailed Defect Report

Item	Details	Photographic Details
1.	<p><b>Location:</b> Unit 18 - Living Area.</p> <p><b>Initial Conditions:</b> Internally, it can be seen that mold has formed on the ceiling and that the skirting boards appear to be swollen.</p> <p>Moisture readings were obtained in these 2 locations.</p> <ul style="list-style-type: none"> <li>• A moisture reading of 11% WME (Wood Moisture Equivalent) was obtained where the mold was growing, as shown in <b>Image 1</b>.</li> <li>• A moisture reading of 19-20% WME was obtained around the floorboards / skirtings, as shown in <b>Image 2</b>, indicating that the area was holding elevated levels of moisture.</li> </ul> <p>Upon viewing both areas with a thermal imaging camera, no indication of concerning levels of moisture were noted. Elevated moisture levels are typically indicated by dark purple regions on the camera which indicate lower temperatures. <b>Image 3</b> reinforces the results obtained in <b>Image 1</b>, whereas <b>Image 4</b> does not exhibit obvious signs of moisture presence, despite the WME reading of 19-20% obtained in this area.</p> <p>Given the result obtained by the moisture meter it appears the skirting boards were already wet prior to undertaking testing.</p>	 <p>The photographic details section contains four images:</p> <ul style="list-style-type: none"> <li><b>Image 1:</b> A photograph of a ceiling with mold growth. A moisture meter is being used to test the area. An inset shows a green laser light from the meter.</li> <li><b>Image 2:</b> A photograph of a skirting board and floorboard. A moisture meter is being used to test the area. An inset shows a red laser light from the meter.</li> <li><b>Image 3:</b> A thermal image of the ceiling area from Image 1, showing a dark purple region indicating lower temperatures.</li> <li><b>Image 4:</b> A thermal image of the skirting board area from Image 2, showing a red region indicating lower temperatures. The image includes a temperature scale from 16.4 to 20.4 °C and a minimum reading of ~18.7 °C.</li> </ul>

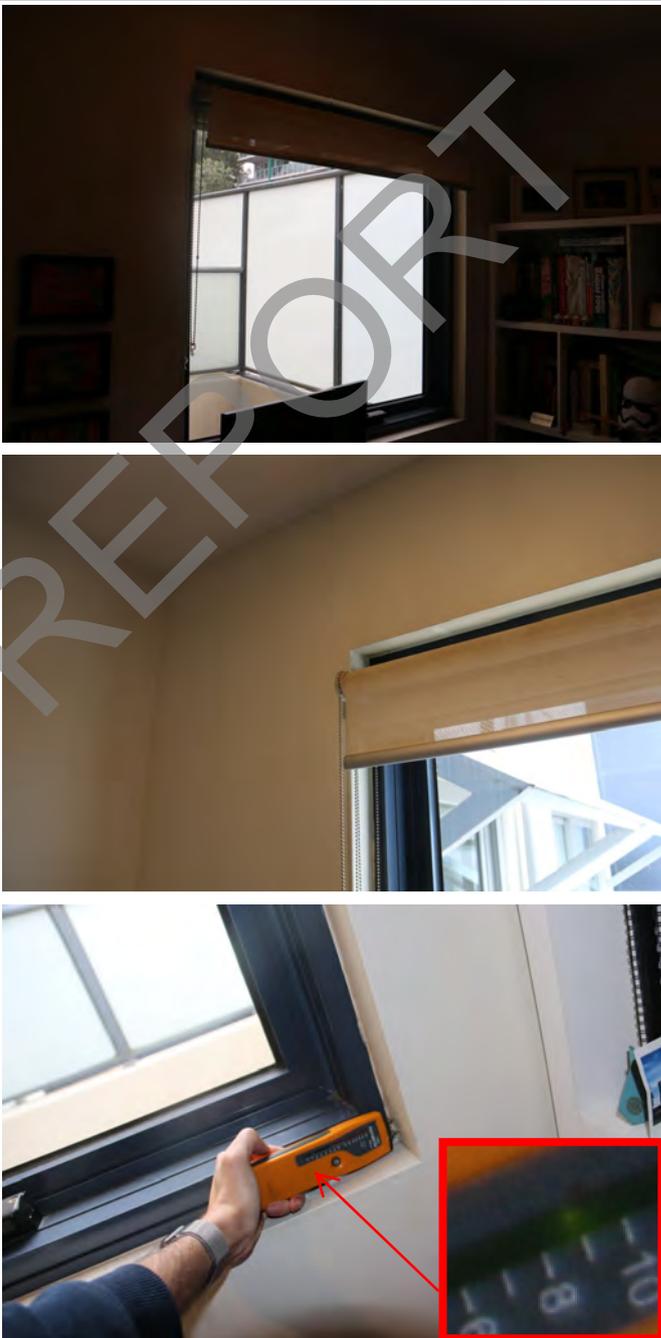
Item	Details	Photographic Details
		 <p>min ~18.9 °C</p> <p>21.2</p> <p>17.1</p> <p>FLIR</p>

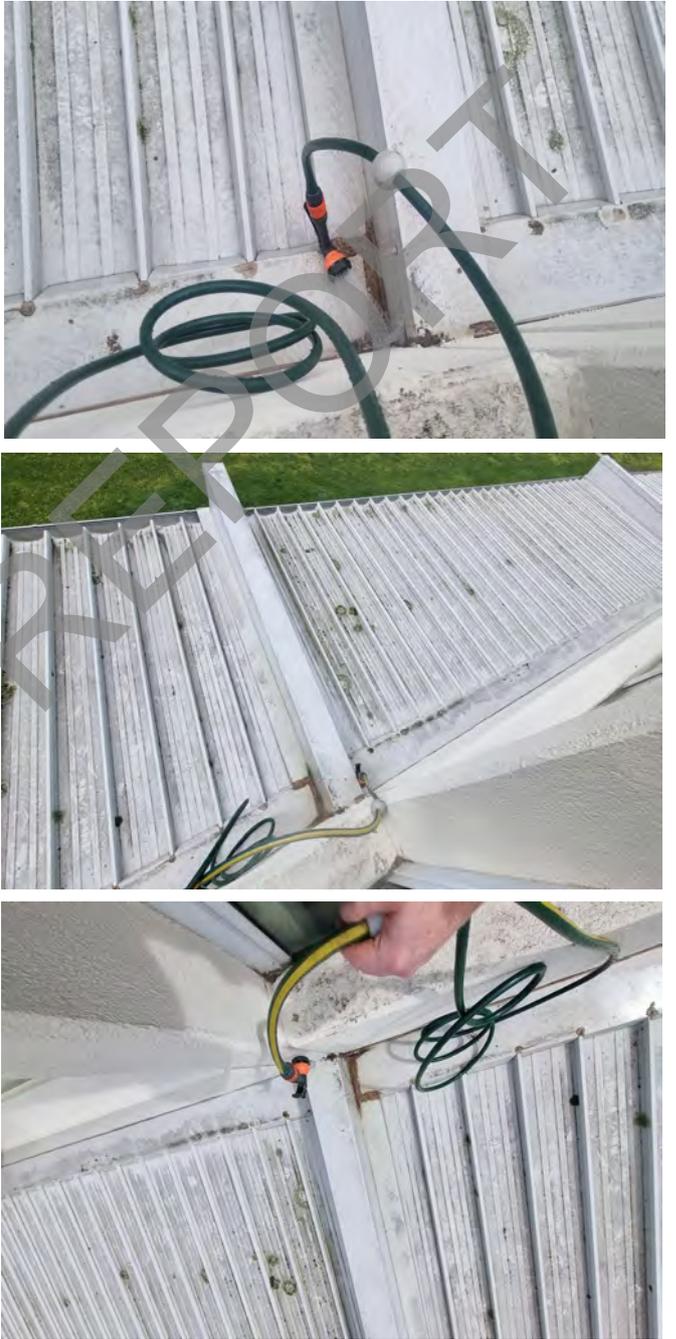
SAMPLE REPORT

Item	Details	Photographic Details
2.	<p><b>Location:</b></p> <p>Unit 17 - Living Area.</p> <p><b>Initial Conditions:</b></p> <p>Internally, it can be seen that there is widespread staining on the ceiling and that the skirtings and floorboards appear to have deteriorated, as shown in <b>Images 1 &amp; 2</b>.</p> <p>Moisture readings were obtained in these 2 locations.</p> <ul style="list-style-type: none"> <li>• A moisture reading of 9-10% WME (Wood Moisture Equivalent) was obtained where the paint was blistering on the ceiling, as shown in <b>Image 3</b>.</li> <li>• A moisture reading of 15-17% WME was obtained around the floorboards / skirtings, as shown in <b>Image 4</b>, indicating that the area was holding slightly elevated levels of moisture.</li> </ul> <p>Upon viewing both areas with a thermal imaging camera, no indication of concerning levels of moisture was noted. Elevated moisture levels are typically indicated by dark purple regions on the camera which indicate lower temperatures. <b>Image 5</b> reinforces the results obtained in <b>Image 3</b>, whereas <b>Image 6</b> does not exhibit obvious signs of moisture presence, despite the WME reading of 15-17% obtained in this area.</p> <p>Given the result obtained by the moisture meter it appears the skirting boards were already wet prior to undertaking testing.</p>	 <p>The photographic details consist of three images. The top image shows a close-up of a ceiling with significant water staining and peeling paint. The middle image shows a corner of a room with a window, where the white skirting board is severely damaged, cracked, and peeling away from the wall. The bottom image shows a person's hand holding a moisture meter against a wall. A red box highlights the meter's display, which shows a reading of approximately 15-17% WME.</p>

Item	Details	Photographic Details

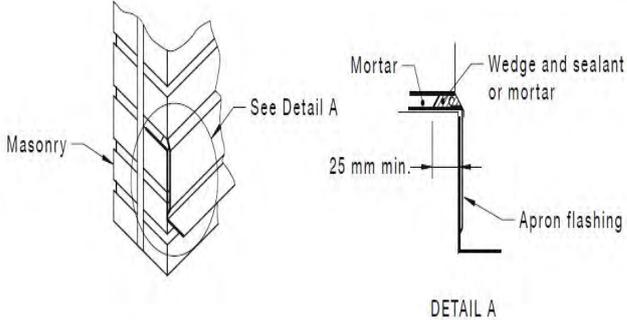
SAMPLE REPORT

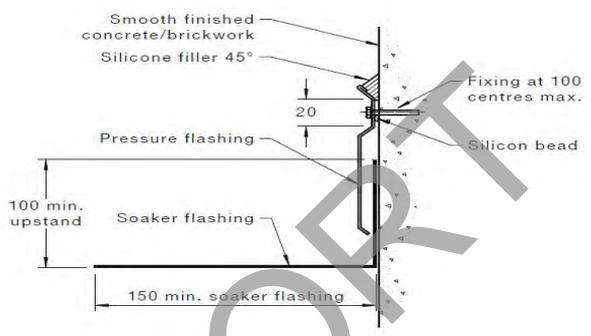
Item	Details	Photographic Details
3.	<p><b>Location:</b></p> <p>Unit 17 - Study.</p> <p><b>Initial Conditions:</b></p> <p>Internally, there does appear to be some discolouration in the paint along the window's head, as shown in <b>Images 1 &amp; 2</b>, however, it is unclear if this is the result of water damage or attempts to repair previously damaged sections of plaster.</p> <p>A moisture reading was obtained in this location.</p> <ul style="list-style-type: none"> <li>A moisture reading of 9% WME (Wood Moisture Equivalent) was obtained near the lower right-hand corner of the window, as shown in <b>Image 3</b>, indicating this area was dry.</li> </ul>	

Item	Details	Photographic Details
4.	<p><b><u>Location:</u></b></p> <p>Level 2 - Roof sheeting.</p> <p><b><u>Finding:</u></b></p> <p>The following areas on the roof sheeting were tested, in order to identify if, and where, there was a point of vulnerability in the roof sheeting that was leading to the moisture ingress into the area below.</p> <p>In the order listed below, the following are some of the areas on the roof that were tested:</p> <ul style="list-style-type: none"> <li>• Unit 18 - directly onto the flashing (<b>Image 1</b>).</li> <li>• Unit 16 - directly onto the flashing (<b>Image 2</b>).</li> <li>• Unit 16/18 boundary - directly onto capping (<b>Image 3</b>).</li> <li>• Unit 16/18 boundary - underneath capping from Unit 18's side (<b>Image 4</b>).</li> </ul> <p>After emulating rainfall for just under 30 minutes, in these areas combined, no evidence of moisture ingress was noted.</p> <p>It is worth noting that during this stage of the inspection, it began to rain.</p> <p><b><u>Recommendations:</u></b></p> <p>See <b>Part#4</b> of this report.</p>	

Item	Details	Photographic Details
		

SAMPLE REPORT

Item	Details	Photographic Details
5.	<p><b>Location:</b></p> <p>Level 2 - Roof sheeting.</p> <p><b>Finding:</b></p> <p>It was noted at the time of the inspection that the capping/flashings upturns were detailed poorly. They have been upturned on the external wall cladding with only flexible sealant protecting this junction from water penetration.</p> <p><b>Clause 8.4, Wall And Step Flashings, from HB39-2015, Installation Guide to Metal Roofing and Walling Cladding, states:</b></p> <p><i>"For material, thickness, expansion, sizes and covers, and wall and step flashings, see Clause 8.1. Additionally, the following points are to be observed [see Figure 8.4 (A)]:</i></p> <p>[...]</p> <p><i>(b) All wall and step flashings are to be fastened into masonry walls with galvanised aluminium/zinc alloy-coated or aluminium/zinc/magnesium-coated sheet metal wedges at each end of each length and other than pressure flashings at intermittent intervals not exceeding 500 mm [see Figure 8.4 (B)]. Alternatively, sloped wall flashings are to incorporate a weathering fold fixed into a 25 mm deep saw cut see Figure 8.4(A)(b).</i></p> <p><i>(c) Pressure flashings may be used in lieu of cutting grooves into walls provided they are used only with smooth surface finished walls, e.g. smooth finished concrete or smooth finished brickwork with flush pointed mortar courses, provided [see Figure 8.4(C)]-</i></p> <p>[...]</p>	  <p style="text-align: center;">FIGURE 8.4(B) MASONRY FIXING WEDGES</p>

Item	Details	Photographic Details
	<p><b>Images 3 &amp; 4, show Figures 8.4 (B &amp; C), Masonry Fixing Wedges &amp; Pressure Flashing, from HB39-2015</b></p> <p><b>Recommendations:</b></p> <p>The OC is to engage a suitably qualified contractor to install pressure flashings along this boundary.</p>	 <p>Smooth finished concrete/brickwork Silicone filler 45° 20 Fixing at 100 centres max. Silicon bead Pressure flashing 100 min. upstand Soaker flashing 150 min. soaker flashing</p> <p>DIMENSIONS IN MILLIMETRES</p> <p>FIGURE 8.4(C) PRESSURE FLASHING</p>

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Item	Details	Photographic Details
6.	<p><b>Location:</b> Unit 18 - Level 2 Balcony.</p> <p><b>Finding:</b> Upon emulating rainfall on the level 2 balcony of Unit 18, as shown in <b>Image 1</b>, water ingress into the ceiling of the living area below was noted, as indicated by the cold spot (dark purple) present upon viewing the area with a thermal imaging camera, as shown <b>Image 2</b>.</p> <p>Following this, the Living Area's ceiling within Unit 17 was also inspected; however, no observable evidence of moisture ingress was noted.</p> <p>In light of the fact that it had been raining and the roof sheeting nearby had just been heavily tested, red food colouring was poured onto the balconies surface, as shown in <b>Image 3</b>, in order to confirm that it was surface moisture from the balcony inducing the leak.</p> <p>Shortly after doing so, the red water was seen seeping through the ceiling, as shown in <b>Image 4</b>.</p> <p>Based on these results, it is clear that surface moisture from the balcony is reaching the internal side of the ceiling underneath.</p> <p><b>Recommendations:</b> See <b>Part#4</b> of this report.</p>	

Item	Details	Photographic Details
		 A photograph showing a close-up of a white ceiling. There is a significant area of water damage, including a large, irregular brown stain and a smaller, dark circular hole. A small red dot is visible on the ceiling surface below the main stain.

SAMPLE REPORT

Item	Details	Photographic Details
7.	<p><b>Location:</b></p> <p>Unit 18 - Level 2 Balcony.</p> <p><b>Finding:</b></p> <p>It was noted at the time of the inspection that floor surface of Unit 18's level 2 balcony was not tiled. Based on discussion with one of the residents of the unit, it was established that new surface was applied in order to address issues relating to the balcony's surface falls. Despite this, water still accumulates in the center of the balcony, subsequently inducing staining, as shown in <b>Image 1</b>.</p> <p>Furthermore, while undertaking water testing on this balcony it was noted that surface moisture first fell to this suspected low point, before making its way to the balcony's outlet, as shown in <b>Images 2 &amp; 3</b>.</p> <p>In light of this, it appears as though the issues pertaining to the surface's falls were not resolved despite the previous works.</p> <p><b>Recommendations:</b></p> <p>When undertaking the works discussed in <b>Part#4</b> of this report, care should be taken to ensure that the balcony's floor surface is provided with consistent falls of no less than 10 mm/ m towards the designated outlet.</p>	  

SAMPLE

Item	Details	Photographic Details
8.	<p><b><u>Location:</u></b></p> <p>Unit 18 - Level 1 Balcony.</p> <p><b><u>Finding:</u></b></p> <p>After emulating rainfall for approximately 10 minutes on the level 1 balcony of Unit 18, as shown in <b>Image 1</b>, no evidence of moisture ingress into the living area ceiling of Unit 17 below was noted.</p> <p><b><u>Recommendations:</u></b></p> <p>See <b>Part#4</b> of this report.</p>	

SAMPLE REPORT

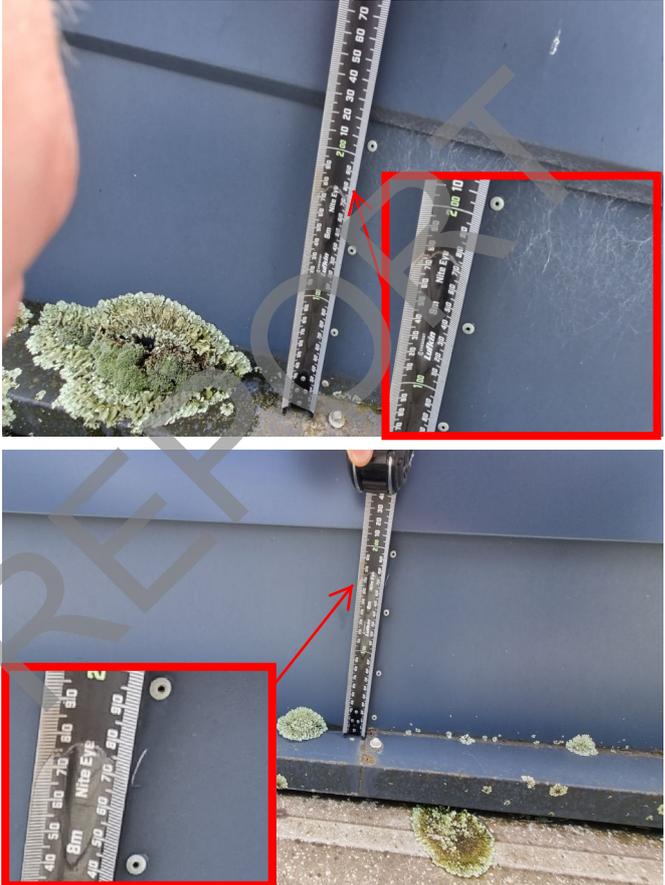
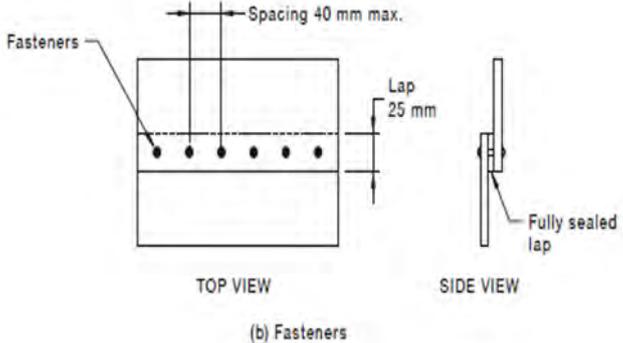
Item	Details	Photographic Details
9.	<p><b><u>Location:</u></b></p> <p>Unit 17 - Ground Courtyard.</p> <p><b><u>Finding:</u></b></p> <p>Upon emulating rainfall on the external facade above the study's window, as shown in <b>Image 1</b> , water began to bypass the window frame and enter and enter into the study, as shown in <b>Image 2</b>.</p> <p>Based on this test, it is clear that window frame is not weather-tight and is not an effective barrier against rain.</p> <p>It is worth mentioning that an excessive amount of silicone has been applied liberally to the head of the window, in an attempt to resolve the issue; however, this has proved to be ineffective.</p> <p><b><u>Recommendations:</u></b></p> <p>See <b>Part#4</b> of this report.</p>	

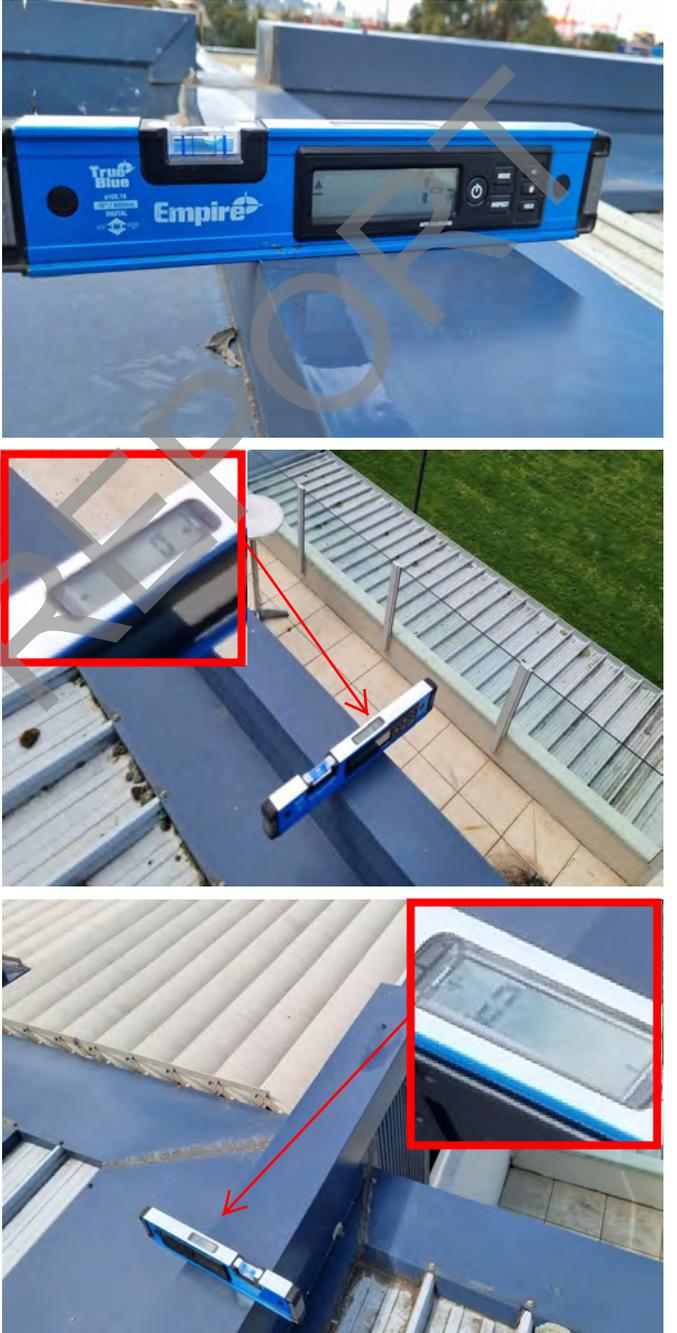
## Roof inspection

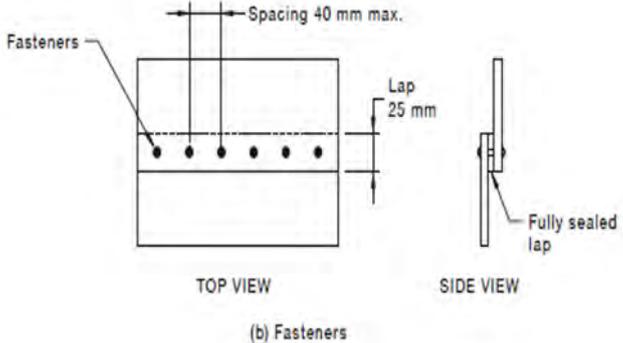
Item	Details	Photographic Details
10.	<p><b>Location:</b> Rooftop - Capping</p> <p><b>Finding:</b></p> <p>It was noted at the time of the inspection that the fixings in some of the capping were spaced too far apart. <b>Images 1 - 3</b>, show how the centers of some fixings approximately 1000 mm apart. This is despite the fact that the minimum requirement is to fix the capping every 500 mm.</p> <p>This is a safety issue as unsecured flashings have been known to come loose from buildings during strong wind events and there is the potential for someone to be seriously injured or killed if they are hit by one of these flying off from a rooftop.</p> <p><b>Clause 8.7, All Other Flashings And Cappings</b>, from <b>HB39-2015, Installation Code for Metal Roof and Wall Cladding</b>, states:</p> <p><i>"All other flashing and capping to be fastened to the metal roof covers at intervals not exceeding 500 mm with self-drilling roof screws into the roof supports it rivets into the roof cover. All self-drilling self-tapping roof screws are to be fastened on crests of roof covers. For particular situations, the following is to be taken into consideration:</i></p> <p>[...]</p> <p><i>(b) Parapet capping [...] to be fixed to parapet walls at intervals not exceeding 500 mm with masonry anchors and cleats that permit longitudinal expansion and contraction. A minimum fall of 3° to be provided across the width of the flashing to diver water back onto the roof coverings so as to prevent the water from dripping down the fascia causing unsightly staining [see Figure 8.7 (A)]</i></p>	

Item	Details	Photographic Details
	<p><b><u>Recommendations:</u></b></p> <p>Additional fixings should be installed throughout the rooftop capping, ensuring that they are secured with fixings at least every 500 mm.</p>	

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Item	Details	Photographic Details
11.	<p><b>Location:</b> Rooftop - joints.</p> <p><b>Finding:</b> It was noted at the time of the inspection, that some of the joints had been insufficiently fixed. <b>Images 1 &amp; 2</b>, demonstrate how the spacings between the fixings on the joints exceeds 40mm, despite this being the maximum allowable distance between fixings on lap joints in flashings, according to Australian Standards.</p> <p>Joints in roof capping can be considered points of vulnerability when it comes to moisture ingress, since it is where two points of discontinuity in the sheets meet. Sealing the joints, in conjunction with sufficiently fixing them, further mitigates the likelihood of moisture ingress from them.</p> <p><b>Clause 5.8.3, Fastening and Sealing with Sealants, from HB39-2015, Installation Code for Metal Roof and Wall Cladding, states:</b></p> <p><i>"Joints in aluminium/ zinc, aluminium/ zinc/ magnesium alloy- coated steel, prepainted steel flashings and capping are to be fastened at intervals not exceeding 40 mm and silicone sealed with neutral cure silicone sealants [...]"</i></p> <p><b>Image 3</b> shows <b>Figure 2.9, Sealant Joints from HB39-2015</b>, which illustrates the minimum requirements for a joint detail.</p> <p><b>Recommendations:</b> Additional fixings should be added to joints that have been insufficiently fixed. If it is noted that there is no silicone between said joints, then all the fixings will need to be removed and the joint sealed, prior to the installation of additional fixings.</p>	  <p>(b) Fasteners</p>

Item	Details	Photographic Details
12.	<p><b><u>Location:</u></b></p> <p>Rooftop - Cappings</p> <p><b><u>Findings:</u></b></p> <p>It was noted at the time of the inspection that the cappings on the had little to no fall on them (0 - 1 degrees), as shown in <b>Images 1 - 3</b>.</p> <p>It is worth noting that Australia Standards require parapet cappings to have a fall of 3 degrees in order to divert water away from the facade. When neither side falls to a facade it is still good practice to ensure that the horizontal surface has enough fall to facilitate the complete drainage of water.</p> <p><b>Clause 8.7, All Other Flashings And Cappings, from HB39-2015, Installation Code for Metal Roof and Wall Cladding, states:</b></p> <p><i>"All other flashings and cappings to be fastened to the metal roof cover at intervals not exceeding 500 mm with self- drilling roof screws into the roof supports or rivets into the roof cover. All self-drilling self- tapping roof screws are to be fastened on crests of roof covers. For particular situations, the following is to be taken into consideration:</i></p> <p>[...]</p> <p><i>(b) Parapet cappings [...] to be fixed to parapet walls at intervals not exceeding 500 mm with masonry anchors and cleats that permit longitudinal expansion and contraction. A minimum fall of 3° to be provided across the width of the flashing, to divert water back onto the roof coverings so as to prevent the water from dripping down the fascia causing unsightly staining [see Figure 8.7(A)]."</i></p> <p>[...]"</p> <p><b><u>Recommendations:</u></b></p> <p>The OC to engage a suitably qualified contractor too adjust the cappings to ensure that their falls are in accordance with Australian Standards and effectively facilitate the drainage of water from their surfaces.</p>	

Item	Details	Photographic Details
13.	<p><b>Location:</b></p> <p>Rooftop - Flashing/Capping Joint.</p> <p><b>Finding:</b></p> <p>It was noted at the time of the inspection that the flashing/capping joint was had been liberally sealed and was preventing a small amount of water from drainage, as shown in <b>Images 1 &amp; 2</b></p> <p>Sealant should only need to be applied between lap joints, in order to mitigate these kind of obstructions.</p> <p><b>Clause 5.8.3, Fastening and Sealing with Sealants</b>, from <b>HB39-2015, Installation Code for Metal Roof and Wall Cladding</b>, states:</p> <p><i>"Joints in aluminium/ zinc, aluminium/ zinc/ magnesium alloy- coated steel, prepainted steel flashings and capping are to be fastened at intervals not exceeding 40 mm and silicone sealed with neutral cure silicone sealants</i></p> <p><i>Sealants are to be sandwiched between the lap of joints to provide a positive seal and to protect the silicone sealant from exposure to ultraviolet radiation (see Figure 2.9)"</i></p> <p><b>Image 3</b> shows <b>Figure 2.9, Sealant Joints from HB39-2015</b>, which illustrates the minimum requirements for a joint detail.</p> <p><b>Recommendations:</b></p> <p>The OC should engage a suitably qualified contractor to seal the detail the joints on the flashings so that they facilitate the complete drainage of water from the upstream side of the roof.</p>	  <p style="text-align: center;">(b) Fasteners</p>

Item	Details	Photographic Details
14.	<p><b>Location:</b></p> <p>Roof.</p> <p><b>Finding:</b></p> <p>It was noted at the time of the inspection that at least one of the eaves gutters fell away from the outlet. <b>Images 1 &amp; 2</b>, illustrate the direction of fall with respect to the location of the outlet for that particular span of eaves gutter.</p> <p>The spirit level reading in <b>Image 1</b> demonstrates how the magnitude of this incorrect fall is at least 8 mm/m.</p> <p><b>Clause 5.6, Eaves Gutters</b>, from <b>HB39-2015, Installation Code for Metal Roof and Wall Cladding</b>, states:</p> <p><i>"In addition to the recommendations of Clause 5.2, the following apply to the eaves gutters, including any fascia mounted eaves gutters, deck-mounted eaves gutter and concealed eaves gutters [see Figure 5.6(A)]:</i></p> <p>[...]</p> <p><i>(f) Fall Eaves gutter brackets to be installed with a uniform fall towards the outlets to achieve an effective gradient with no permanent ponding. A minimum fall of 1:500 will ensure complete drainage.</i></p> <p>[...]"</p> <p><b>Recommendations:</b></p> <p>The falls in the eaves gutter should be adjusted to facilitate the complete drainage of water within them.</p>	

## Part 3: Discussion.

An extensive water leak investigation was conducted to confirm the source of the water leak into Living Area's ceiling within both Unit 18 & 17. The following section aims to summaries the findings of the investigation.

After testing the Level 2 Roofs of Unit 16 & 18 and the Level 2 Balcony of Unit 18, given that water ingress was noted only during the latter, **it is clear that there is a point of failure within the weatherproofing system of the balcony.** This notion was bolstered by the fact that upon dye testing, the balcony surface, the coloring came through to the ceiling beneath.

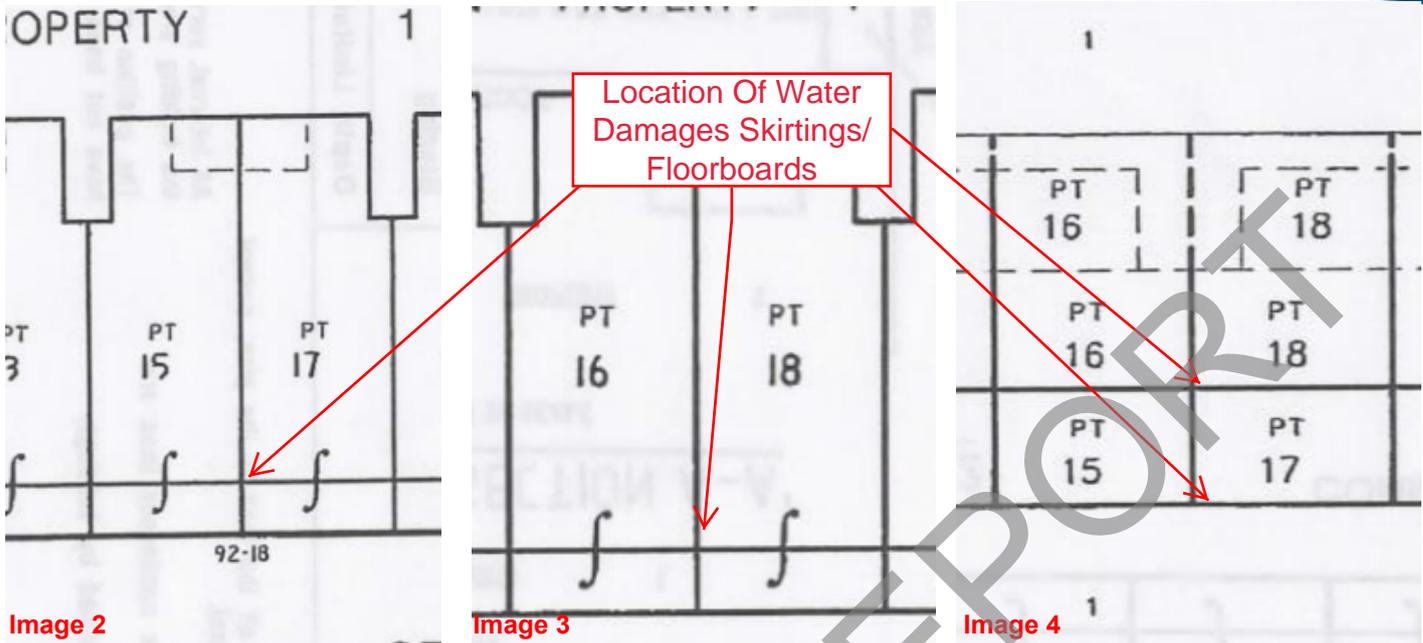
Despite this, a previous investigation carried out by other contractors identified the point of failure to be on the Neighboring (Unit 16) unit's Level 2 - Balcony. Specifically, the points of vulnerability were noted as being the "*cracks and holes in external wall and window frame.*", seen in **Image 1**. **During the investigation no tests were carried out to confirm whether or not these were contributing factors to the leak. Prior to any internal repair works being carried out. This should be ruled out as an additional point of water ingress.**



**Image 1: Unit 16's Balcony.**

The leak into the ceiling of Unit 17's Living Area, was not made wet despite water tests conducted on the both the Level 1 & 2 Balconies of Unit 18 above. Based on discussion's between Roscon and one of the residents of Unit 17, it is assumed that the works carried out on the roof (invoice date for works is 24th May 2023) have mostly resolved the water ingress into the ceiling, especially since there had been heavy rainfall & wind events, such as on 02/09/2024, since the completion of these works. It is Roscon's understanding that the owner suspects the staining on the roof has continued to spread, inspite of the works; however, the overall severity of the issue has been reduced.

There was still elevated moisture levels in the skirtings/floorboards of Unit 17 & 18 so water is still finding its way to these areas somehow. In the case of Unit 18, considering the fact that the floorboards are situated directly under an active leak, it is likely that this moisture is simply from water dripping from the leak above; however given the affected skirtings/floorboards lie on the boundary of two balconies and are situated beneath another two, the possibility that water is leaking from one or more of these areas should not be ruled out. In a similar way, the precise point of water ingress inducing moisture damage to the skirtings/floorboards, in Unit 17, is difficult to say with certainty. **Images 2 - 4**, demonstrate how the affected skirtings/floorboards of both Units 17 & 18 lie along and underneath the boundaries of multiple balconies of other apartments. Furthermore it is possible, that a leak from the roof which is able to make its way into the ceiling of ground level, is also continuing to impact the skirtings/floorboards of Unit 17.



**Images 2 - 4: Snips from Sheets 2, 3 & 4 of the Plan of Subdivision (PS430798A)**

The adjacent/above balconies on Ground and Level 1 of Units 17 & 18 were inspected and were noted to be mostly covered from rain, the balconies of Units 15 & 16 are believed to be of similar construction. In light of this, it is doubtful that the balconies are the source of the moisture in the skirtings/floorboards seen in Units 17 & 18, as the roof works have almost entirely resolved the water ingress into the ceiling of Unit 17, according to the resident, and may be an ongoing symptom of that leak, and the affected skirtings/floorboards in Unit 18 are directly beneath an active leak. Nevertheless to rule out the possibility of the balconies of Units 15,16 ,17 & 18, being the cause/s of the water damage, they should be water tested; however, again this is unlikely to produce any results.

If the owner/s of Units 17 & 18 choose to undertake remedial works for the damaged Skirtings/floorboards, testing should be undertaken to rule out the adjacent balconies as the source of moisture.

It is also worth mentioning that **Unit 17** was suffering from mold growth. Environmental conditions that can contribute to this include, high humidity levels, poor ventilation, ect... . Not only is this a health risk for the residents but it could also be contributing, albeit to an unknown (likely small) degree, to the moisture levels and subsequent deterioration seen in the skirtings/floorboards. **The owners of Unit 17 should engage an occupational hygienist to investigate the cause of the mold and provide a scope of works on how to resolve it.**

The source of the water ingress at the window within the study, is simply from the external face of the window. This was confirmed upon emulating rainfall on the window and witnessing water ingress on the other side. It appears as though caulking has been applied liberally previously, in what was likely an attempt to prevent future water ingress; however, this is not long term, or effective (evidently), solution to the water ingress.

Finally, the defects noted on the roof are, for the most part, relatively minor. If it is confirmed that the moisture in the skirtings/floorboards is not from the balconies, and is indeed from the roof then at the very least works to resolve the roofing defects should be undertaken although as to whether or not this would resolve the ingress once and for all, is uncertain.

## Part 4: Recommendations

### Unit 18 - Level 2 Balcony, Re-instatement.

1. Remove all balustrades, fences and any other furnishings used throughout the balconies.
2. Remove framing and glazing of openings / windows along the balcony.
3. Remove sections of external cladding around the perimeter of the balconies to facilitate comprehensive waterproofing works.
4. Strip the balcony back to the bare substrate.
5. The balcony substrate (concrete slab) is to be inspected by a Structural Engineer, who is to supply the builder with a scope of works outlining how to best address any concerns noted in the concrete. ( This inspection will be limited to the upper surface of the slab)
6. The slab is to be repaired as per the Structural Engineer's supplied scope of works. Additionally, any voids, cracks and protrusions are to be filled and removed, so that the concrete substrate has a smooth and consistent finish.
7. Apply screed throughout, ensuring a minimum thickness of 40 mm throughout and a consistent fall of no less than 10 mm/m (1:100) towards the floor wastes.
8. Provisions for an overflow are to be made.
9. Re-install, balustrades, fences and any other furnishing's baseplates that need to be fixed prior to waterproofing.
10. Apply waterproofing membrane, in conjunction with the manufacturer's installation guide and **AS4654.2-2012, Waterproofing Membranes for External Above-Ground Use**, to the balconies. See **Images 1-7** below which illustrate how the membrane should be terminated in different areas.
11. Conduct acceptance testing, including flood testing of the balcony, in accordance with **AS4654.2**
12. Re-Instate openings/windows to the balconies.
13. Re-install balustrades, fences and any other furnishings to their respective baseplates (If any of these systems do not have base/fixing plates independent of the supports, then they should be installed prior to the application of the waterproofing membrane, although Image 7 illustrates a compliant method for installing them after the waterproofing membrane application).
14. Install new tiled system in accordance with **AS3958.1-2007, Guide to the Installation of Ceramic Tiles**.
15. Install external cladding around the perimeter of the balconies in accordance with the manufacturer's installation guide.
16. Conduct acceptance testing, including flood testing of the balcony, in accordance with **AS4654.2**.
17. Upon satisfaction, the degree to which is dictated by the owner, that all water leaks have been resolved, works to repair internal ceiling elements can be undertaken

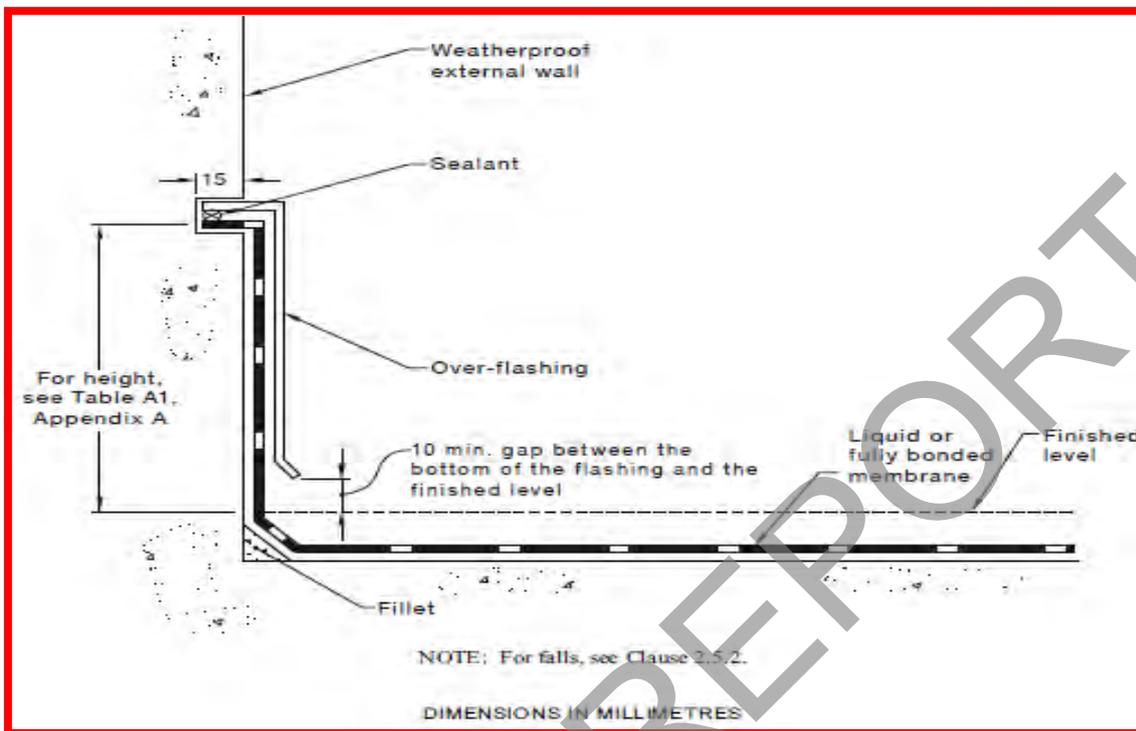


Image 1: Figure 2.2 Typical Vertical Upward Termination - Detail Of Over-Flashing For Liquid Or Full Bonded Sheet Membranes

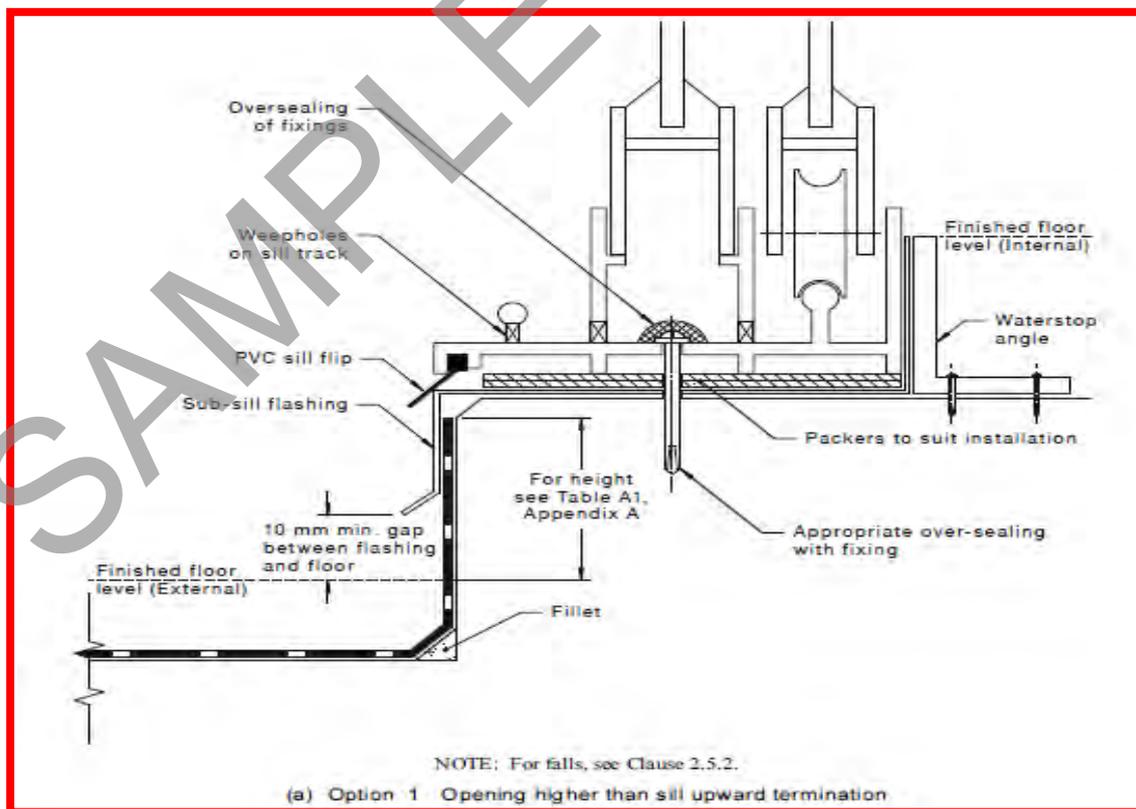


Image 2: Figure 2.8 (in part) Typical Details Of Membrane Termination At External Opening Doors.

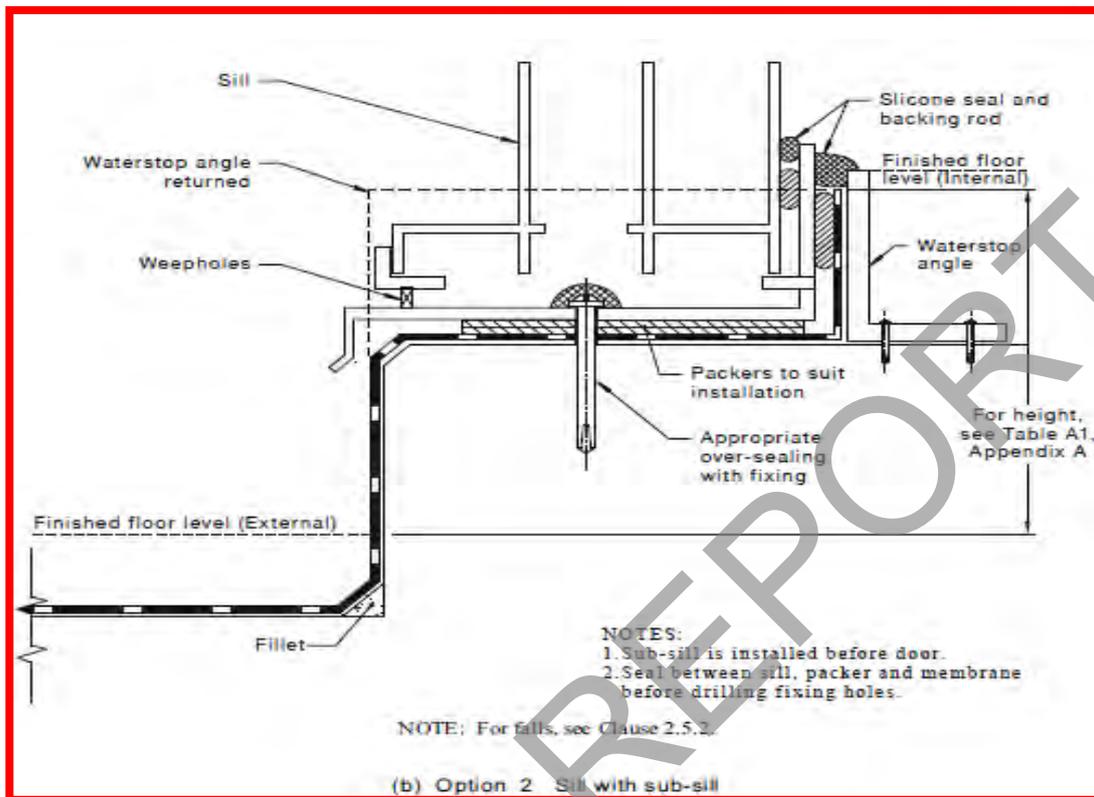


Image 3: Figure 2.8 (in part) Typical Details Of Membrane Termination At External Opening Doors.

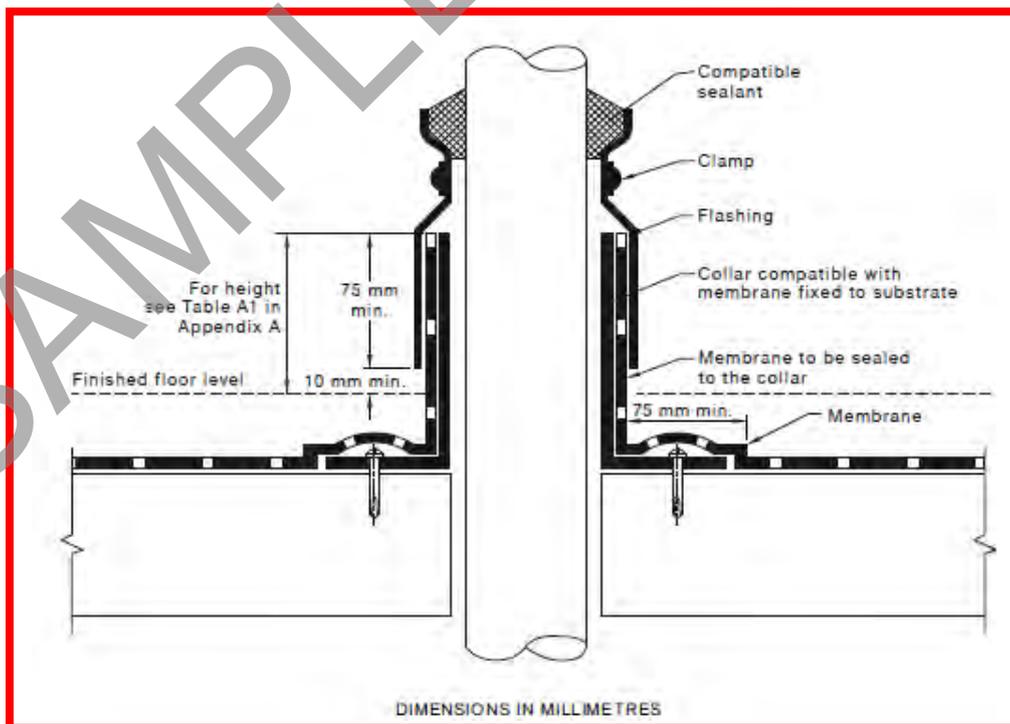


Image 5: Figure 2.10 - Typical Details Of Vertical Penetration Using A Collar.

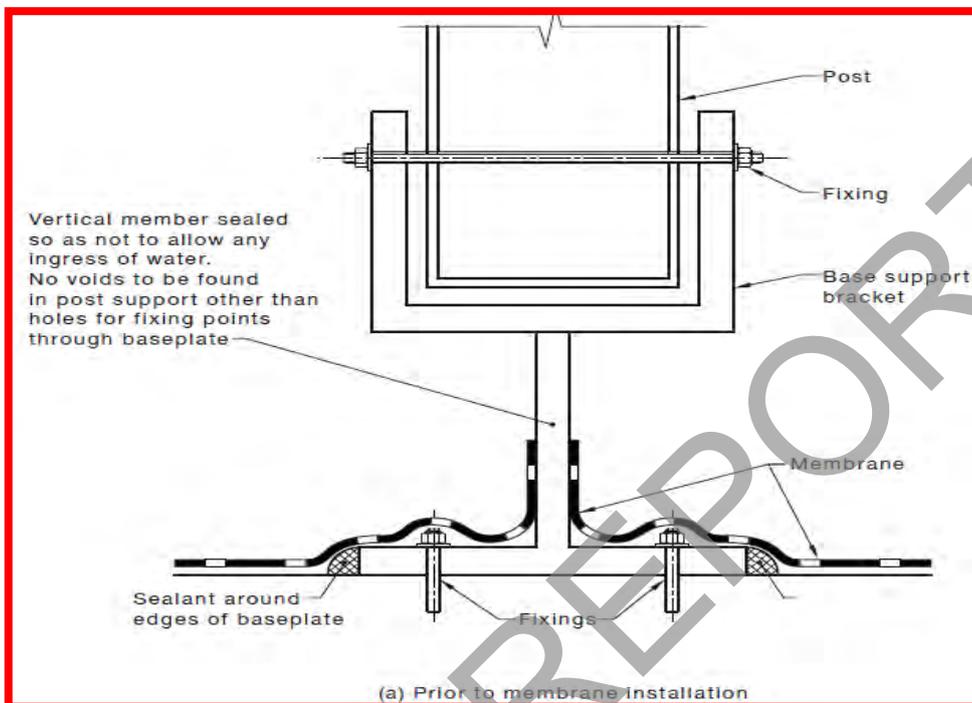


Image 6: Figure 2.12 (in part) - Typical Details Of Metal Post Support.

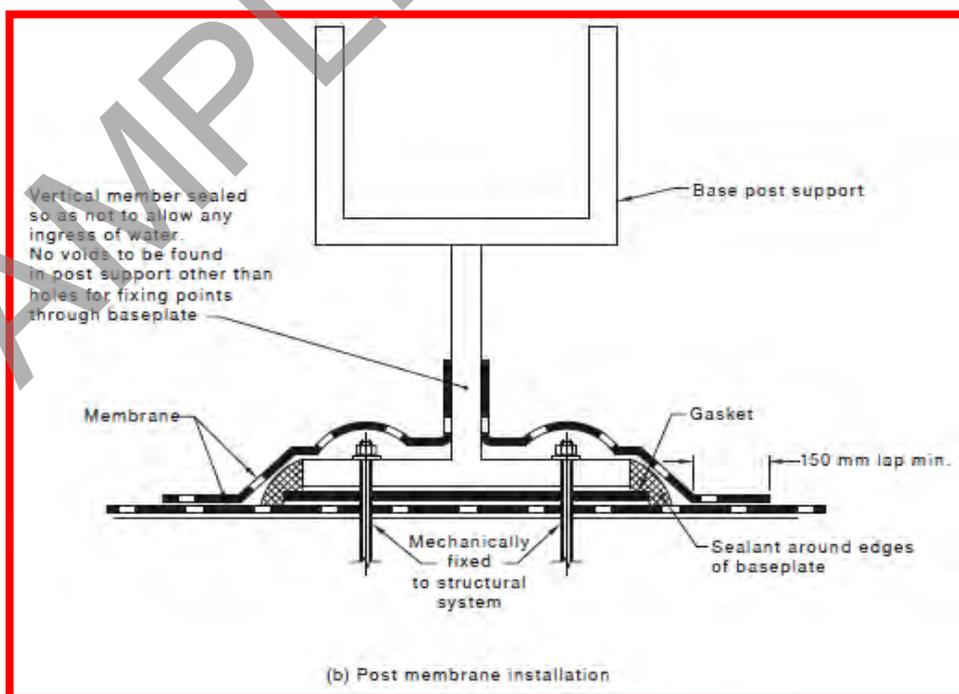
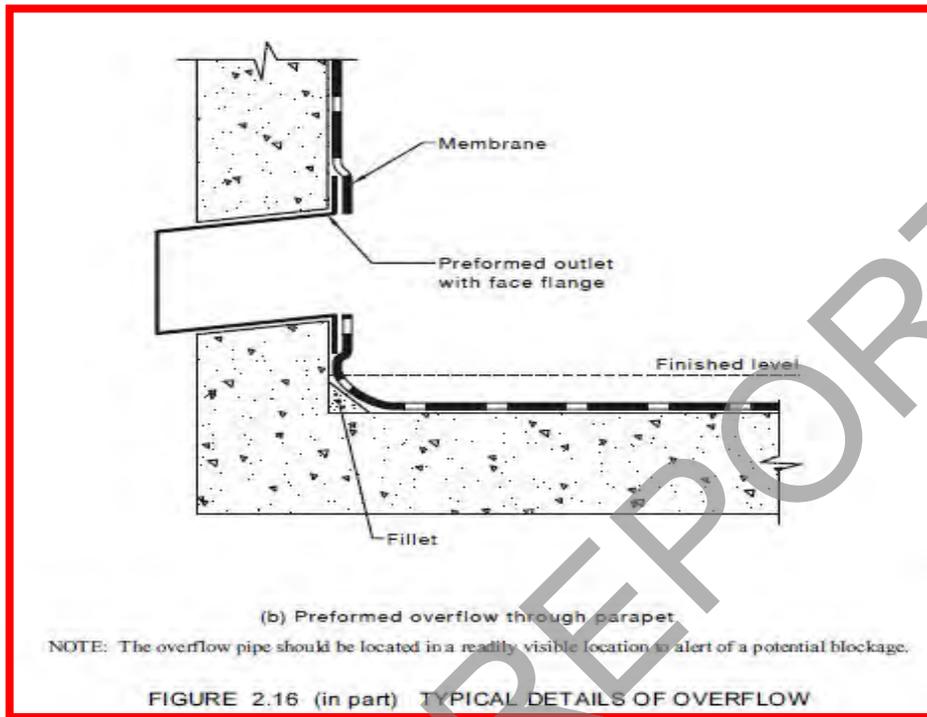


Image 7: Figure 2.12 (in part) - Typical Details Of Metal Post Support.



**Image 8: Figure 2.16 (in part) - Typical Details Of Overflow**

**Unit 17 - Ground Window, Replacement.**

Engage a suitably qualified contractor to remove the window, adjust the opening size (if deemed necessary), and re-install the window ensuring flashings and provisions for movement are provided in accordance with the manufacturer's recommendations. Acceptance tests should be carried out upon the completion of these works.

## Terms and Conditions

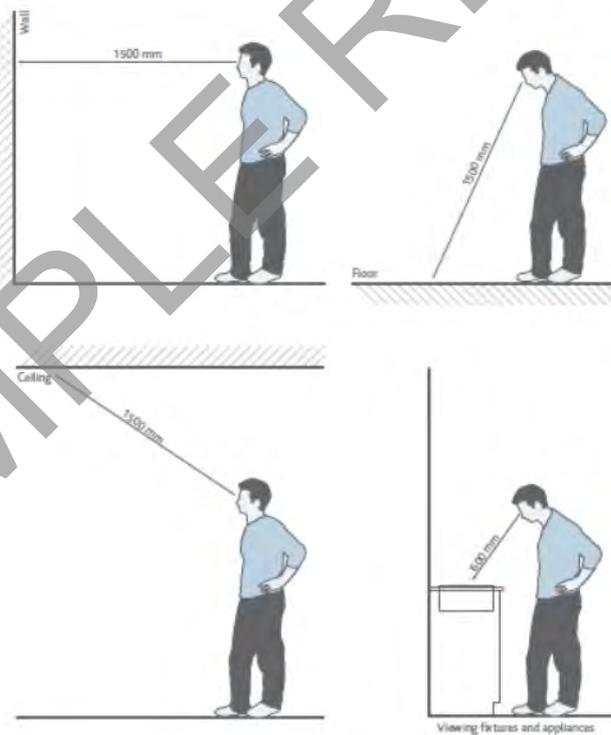
The following information is very important and forms an integral part of this report.

### 1. This is a Visual Inspection only and in Accordance with AS4349.

This visual inspection is limited to those areas and sections of the property fully accessible and visible to the Inspector at the time and on the date of Inspection. The inspection DID NOT include breaking apart, dismantling, removing or moving objects floor or wall coverings, sidings, ceilings, floors, furnishings, appliances or personal possessions unless stated in the report. The Inspector CANNOT see inside walls, between floors, inside skillion roofing, inside the eaves, behind stored goods in cupboards, or other areas that are concealed or obstructed. In an occupied property it must be understood that furnishings or household items may conceal defects which may only be revealed when the items are removed.

Generally, variations in the surface colour, texture and finish of walls, ceilings, floors and roofs, and variations in glass and similar transparent materials are only noted as a defect where they can be viewed from a normal viewing position, in accordance with Section F of the Guide to Standards and Tolerances 2015. Normal viewing positions can be identified in Diagram F, of this guide, seen below.

DIAGRAM F NORMAL VIEWING POSITIONS



Slight variations in the colour and finish of materials do not always constitute a defect.

### 2. Scope of Report

This Report is not intended as a certificate of compliance of the property within the requirements of any Act, regulation, ordinance or by-law, or, as a warranty or an insurance policy against problems developing with the building in the future.

### 3. Limitations

Nothing contained in the Report implies that any inaccessible or partly inaccessible area(s) or section(s) of the property being inspected by the Inspector on the date of the inspection were free from defects latent or otherwise.

No responsibility can be accepted for defects which are latent or otherwise not reasonably detected on a visual inspection without interference with or removal of any of the structure including fixtures or fittings within the building.

This Report does not contain any assessment or opinion in relation to any item, which is the subject of a Special Purpose Property Report (as defined in AS4349.1), or any matter where the inspection or assessment of which is solely regulated by Statute. Special Purpose Property Reports include comment on the following: Common property areas, environmental concerns such as sunlight, privacy, streetscape and views. Proximity of property to flight paths, railways and busy traffic or other neighbourhood issues. Noise levels, health and safety issues including the presence of asbestos or lead. Heritage concerns. Security or fire protection. Analysis of site drainage apart from surface water drainage. Swimming pools and spas. Detection and identification of illegal and unauthorised building and plumbing work. Durability of exposed finishes.

If a defect or other matter in this report is outside of our area of expertise it will be stated within the report, or we will seek comment from someone suitably qualified in the matter.

### 4. Important Information

Any person who relies upon the contents of this Report does so acknowledging that the above clauses, definitions and disclaimers that follow define the Scope and Limitations of the inspection and form an integral part of the report.

### 5. Disclaimer of Liability

No liability shall be accepted on account of failure of the Report to notify any problems in any area(s) or section(s) of the subject property physically inaccessible for inspection, or to which access for Inspection is denied by or to the Inspector (including but not limited to any area(s) or section(s) so specified by the Report.

### 6. Disclaimer of Liability to Third Parties

This report is made solely for the use and benefit of the Client named on the front of this report. No liability or responsibility whatsoever, in contract or tort, is accepted to any third party who may rely on the Report wholly or in part. Any third party acting or relying on this Report, in whole or in part does so at their own risk.

### 7. Expert Witness

The signatory 'the author' of this report and the nominated assistant/s (if any) who also inspected the property under my supervision are capable of giving evidence in relation to all matters contained in this report in the event that I am not available for whatever reason to provide verbal evidence to the court. I authorise any of the nominated assistants named in this report to provide verbal evidence if required in my absence and on my behalf.

### 8. Contractual Limitation of Liability

- We will use reasonable endeavours to maintain professional indemnity insurance for an amount not less than A\$5 million while providing the services and for three (3) years after completion of the services ("Period of Liability").

- To the extent permitted by law, our liability to you in any way in connection with this matter (whether in negligence or otherwise) is limited to \$5 million. To the extent permitted by law, if a court holds that we are liable to pay damages to you and if you or any other person have contributed to the loss you suffered, the damages payable by us will be reduced to the amount which would ultimately be payable by us if: (a) the legislation providing for a defence of contributory negligence applied to a claim based on breach of contract; (b) you had not agreed to exempt or limit the liability of any entity or person; and (c) you joined every entity or person who was liable to pay damages in respect of your loss and we obtained an order for contribution against each of them and they paid you the full amount of their contribution.
- Subject to a maximum aggregate liability for all claims in connection with the services being provided the consultant will pay the lesser of A\$5 million or five (5) times our total Fees charged to you (excluding GST).
- Our liability is limited to liability for direct loss or damage suffered by the Client. The Consultant shall not be liable for indirect, consequential or special loss, or for loss of profits or business opportunity, or liquidated damages.
- To the maximum extent permitted by law, the Consultant shall be deemed to have been discharged from all liability in respect of the Services whether under contract, in tort, in equity, under statute or otherwise, on the expiry of the 'Period of Liability'.
- If and to the extent that any part of clause 8 is void as a result of any section of the Competition and Consumer Act 2010 (Cth) or any other Act, then the Consultant's liability for a breach of its obligations under this Agreement is limited to supplying the relevant Services again or paying the reasonable costs of having a third party supply the same Services again.
- We accept no responsibility for any loss suffered as a result of any reliance upon such assessment or report other than as being accurate at the date the property was inspected for the purpose of the assessment or report.
- Our findings are valid for 90 days from the date of issue of our assessment or report.

## 9. Lighting Installations

Unless expressly stated in any section of this report, it should be noted that this inspection was done during daylight hours and therefore the adequacy of lighting in darkness could not be directly assessed.

## 10. Electrical Installations

We have carried out a thorough visual inspection of the property and assets visible from the common property areas. If there were any visible electrical installation issues they have been included in the relevant sections of this report. We have not carried out a thorough inspection of electrical installation and the main switch board, as we are not qualified to do so, please ensure that a suitably qualified electrical contractor carries out a thorough visual inspection at least every 2 years, this inspection can be incorporated with the testing of the Residual Current Device if Community Circuits are present.

## 11. Plumbing, Gutters & Downpipes and Roofs

We have carried out a thorough visual inspection of the property and assets visible from the common property areas. If there were any visible plumbing, gutters, down pipe or roof issues they have been included in the relevant sections of this report. We have not carried out any static pressure testing or hydraulic calculations, please ensure that a suitably qualified plumbing contractor carries out a thorough regular inspection. We will recommend a qualified plumber to inspect if an issue is found.

## 12. Lifts

Please ensure that if lifts are in the building(s) that regular maintenance programs are in place. This report does not cover lifts.

### 13. Air Conditioning

Only a general external inspection of air conditioning units is carried out where installed, therefore please ensure that if the Owners Corporation has air conditioner(s) in the building(s) they have regular maintenance programs in place. This report does not cover air conditioning units and air condition cooling towers.

### 14. Plant and Equipment

Please ensure that if the Owners Corporation has plant and equipment in the building(s) that regular maintenance programs are in place for each piece of plant and equipment. This report does not cover plant and equipment unless specifically stated.

### 15. Balcony Balustrades

Wherever balcony balustrades are installed, please be advised that a comprehensive inspection of balcony railings was not carried out as part of this report. Also this report is only a visual inspection of areas accessible. Therefore all balcony balustrades are not viewed. If there are any visible signs of corrosion on the balustrade including fixings and/or if the balustrades are over 10 years old a detailed inspection and testing of balustrades should be undertaken.

### 16. Pest Reports

If there are any visible signs of termite damage it is included in this report. We have not carried out a pest inspection of the site; as we are not qualified to do so, please ensure that a suitably qualified pest inspection contractor carries out thorough regular inspections.

### 17. Fire Fighting Equipment and Statutory Requirements

It has been assumed that any building needing fire fighting equipment to meet legislative requirements such as the National Construction Code formally known as the Building Code of Australia, did meet those requirements at the time of construction. We have not examined the fire safety requirements for the building and make no comment as to the adequacy of the measures found in the complex. If the Bodies Corporate wishes to ascertain its position with respect to fire safety compliance it may carry out its own assessment. These guidelines should be placed on the Owners Corporation notice board. We have visually inspected the fire fighting equipment but have not carried out any testing and therefore cannot determine if the equipment has been tampered with or will be effective in case of fire.

**Rooms below ground level:** If there are any rooms under the house or below ground level (whether they be habitable or non-habitable rooms), these may be subject to dampness and water penetration. Drains are not always installed correctly or could be blocked. It is common to have damp problems and water entry into these types of rooms, especially during periods of heavy rainfall and this may not be evident upon initial inspection. These rooms may not have council approval. The purchaser should make their own enquiries with the Council to ascertain if approval was given. Where the property is covered by an Owners Corporation (Strata Title), we strongly recommend that an Owners Corporation search be conducted to ascertain the financial position, the level of maintenance and any other relevant information available through the conduct of such an inspection.

### 18. Safe and Reasonable Access

The extent of accessible areas shall be determined by the inspector at the time of inspection, based on the conditions encountered at the time of inspection. The inspector shall also determine whether sufficient space is available to allow safe access to specific areas of the property.

The inspection shall include only accessible areas and areas that are within the inspector's line of sight and close enough to enable reasonable appraisal. Reasonable access shall be determined in accordance with the following. An access hole shall be a minimum of 400 x 500 mm to provide safe and reasonable access. A crawl space shall be a minimum of 600 x 600 mm to provide safe and reasonable access.

The inspector shall inspect an elevated area only when; it is at a height at which safe reasonable access is available or an unobstructed line of sight is present from safe use of a 3.6 metre ladder and the building elements present are close enough to allow appraisal.

## 19. Cost Estimates

The Client acknowledges that any cost estimates provided as part of the Services are not a statement of absolute cost, and rather will have an accuracy range commensurate with, amongst other things, all relevant information provided by the Client, the certainty of data and the level of detail available at the time of preparation. When cost estimates are to be used in critical financial planning decisions or are of material commercial significance, the Client should consider a third-party peer review to confirm the accuracy of the estimates prepared by the Consultant.

All construction costs estimates referred to in this report can only be an indication as at the date of the report, therefore the estimate costings we provide are indicative and hypothetical only, despite us using our construction industry experience and best up to date construction cost guides available.

Construction costs can only be accurately determined by a fixed price contract from a registered Builder or a qualified contractor in an arm's length transaction between two independent parties in which both parties are acting in their own self-interest.

Other factors that may influence construction costs at any given time are, but not limited to the following:

- a. Changes in - interest rates, zoning and planning, government policies and legislation, the general state of the economy, local market fluctuations, amenities in the area, changes to the property itself and neighboring properties, supply & demand for building work at the time.
- b. The number of builders who are asked to tender and market exposure of the tender may also influence the final costs of the works.
- c. The terms and conditions offered in any tender.

It is therefore important to note that our cost estimates are general in nature and should not be relied upon if a financial objective is to be achieved.

## 20. Equipment Utilized

A visual inspection of the property has been aided by the use of the following technical pieces of equipment where appropriate.

FLIR E6-3900 – A FLIR E6-3900 thermal imaging camera has been utilized in appropriate locations to detect thermal anomalies across the surface of different areas of the inspected property. It is especially useful in the identification of water ingress as water is usually cooler than the surrounding building elements and aided the inspector in tracking and identified water ingress that is not easily identifiable.

Protometer Mini 2000 – A Protometer Mini 2000 moisture meter has been used to identify high moisture content in various materials affected by moisture ingress. The meter has been calibrated to detect moisture anomalies in a wide range of building materials including timber, plaster, masonry and concrete.

RIDGID micro CA-300 – A RIDGID micro CA-300 inspection camera is utilized to provide imagery of hard to reach or concealed spaces, when required. It aids the user in inspecting ceiling/wall cavities, or any other hard to access area, to provide as much detail as possible in the identification and location of problem areas.

Merlin lazer glass analysis tools – The Merlin lazer glass analysis suite provides an array of instruments for the exact inspection and identification of all glazed elements within a building. Any deviation from the Construction Issue building drawings can easily be identified as the glazing installed throughout a building can be precisely compared to what has been specified in these documents.

## 21. Our Accounts and Payment of our Costs

We may request a deposit before we commence any works on your behalf of which will be utilised in reduction of the IQS we may also send you a bill from time to time for services already rendered or for services to be rendered which may be at the end of each month or at suitable breaks in the matter and at the end of this matter. We may also ask you to pay an amount in advance to cover past or future disbursements. Our bill is payable when you receive it. Our payment terms are 14 days from date of our invoice. If you do not pay our bill, we may stop working on your matter until our account is up to date. Forensic Building Defects and VCAT Expert Witness reports or any other report which our fee for the said report exceeds \$5,000 the client undertakes to make our payment on presentation of our Tax Invoice before the report is released by us to you

## 22. Copyright

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Service | Quality | Value

SAMPLE REPORT