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Forensic Water Leak Investigation Report

1 Sample Street, Melbourne VIC 3000 (PS XXXXXX)

- ✓ 30+ years' experience in reporting services
- ✓ 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

Name	Owner Corporation Manager
Company	Owner Corporation
Address	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	

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10/10/2024

Dear OC Manager,

Thank you for using Roscon Property Services Pty Ltd for your 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:

Part 1	Inspection Notes
Part 2	Leak 1 - Ground Floor Lobby and Basement - Car Space G02 & G05
Part 3	Leak 2 - Basement - Car Space T07
Part 4	Leak 3 - Adjacent to Car Space T06
Part 5	Discussion
Part 6	Recommendations
Part 7	Videos
Part 8	Terms and 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 OC Manager, to undertake a Forensic Water Leak Investigation Report, on behalf of the Owners Corporation, for the property at 2Sample Street, Melbourne VIC 3000. The investigation was undertaken on Thursday the 01/01/2024 at approximately 09:30 am. The weather was overcast on the day of inspection. The main purpose of the investigation was to confirm the sources of the leaks into the Ground Lobby and Basement Car Park, that were identified in Roscon's Forensic Building Defects report dated 01/09/2023.

Background Information:

Roscon has undertaken several inspections and written multiple reports for the above property, in the last year. Despite the Occupancy Permit for the complex being provided on 05/09/2017, there has been widespread water ingress occurring throughout both the common property and private areas of the property. In Roscon's Forensic Building Defects Report, it was established that the majority of the leaks in the Common property are occurring around or below the Common area walkway. This is a result of building defects at the property throughout the central walkway areas which are were identified in the defect reort and discussed again further in this report.

The following areas of the property were inspected:

- External Common area walkway.
- Ground floor building entry lobby.
- Basement car park.

The following are the location of some of the water leaks originating from the central walkway.

- Ground floor lobby
- Basement - Car Space G02 & G05
- Basement - Car Space T07
- Basement - Adjacent to Car Space T06

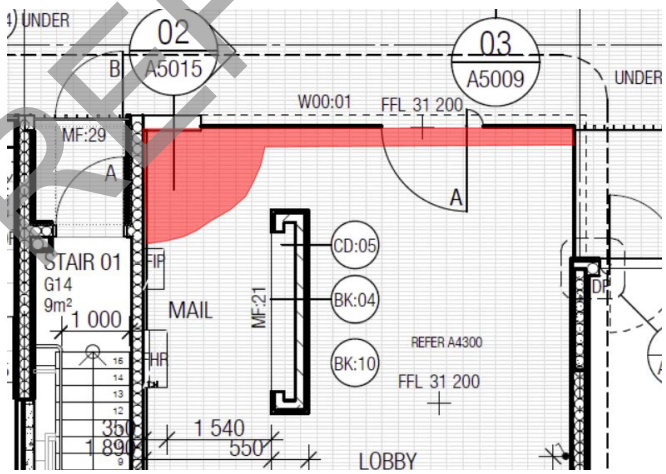
Based on Roscon's observations, the following provisions have been put in place in order to manage the discharge of water into the basement from the walkway above.

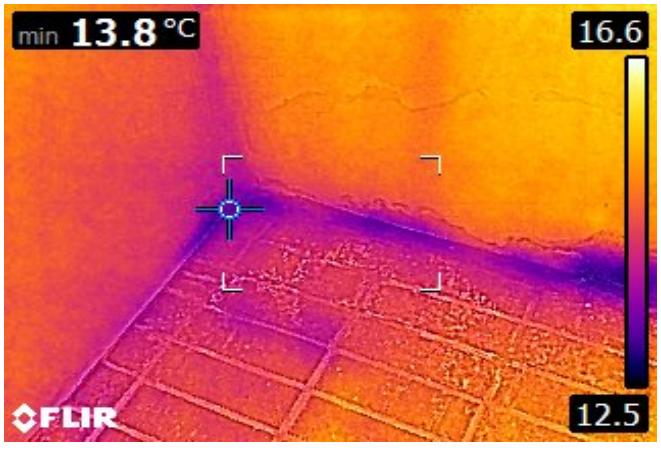
- Drip trays have been installed underneath some of the leaks; however, these are only underneath the leaks of Car Space G02 & G05 and T07 and their coverage is not comprehensive.
- The Irrigation pipes have been reverse sealed with an unknown product, this includes the pipe tested adjacent to Car Space T06.

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.

Part 2: Leak 1 - Lobby and Basement - Car Space G02&G05

Item	Details	Photographic Details
1.	**Location:** Ground Floor Lobby **Initial Conditions:** A water leak was originally noted into the ground floor entry lobby of the building at the time of Roscon's previous Forensic Building Defects Inspection Report in June 2023. The condition of the internal wall at this time can be seen in **Image 1**. Since this original inspection for the Forensic Building Defect report, the degree to which the wall had deteriorated since is difficult to ascertain as it had recently been patched, as shown in **Image 2**. Nevertheless, the new wall was already, visually, showing signs of deterioration as indicated by the darkened areas along the bottom. Furthermore, the amount of efflorescent staining on the brick appears to have increased as well. Externally, it can be seen that moisture is being wicked up the wall, as is indicated by the darkened render along the base of the wall. There is also a section of render that has come loose and delaminated from the wall substrate, likely as a result of this excess moisture, seen highlighted in **Image 3**. While undertaking the previous inspection, Roscon identified excessive moisture within the cavity of the wall, as shown in **Image 4.** The metal frame and surrounding building elements inside the cavity were heavily corroded and damaged when the cavity was originally inspected. The internal moisture readings were highest along the North-Western internal wall, where the visible moisture was highest, and extends in a radius outwards. Moisture was also noted in a close proximity to the along the entire length of the glass screen and swing door. The locations of moisture can be seen indicated in **Image 5**.	

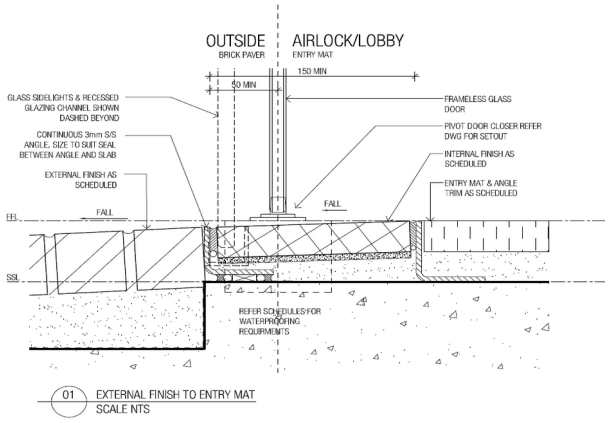
Item	Details	Photographic Details
	Moisture readings were obtained throughout the ground floor lobby. • A moisture reading of 75% WME (Wood Moisture Equivalent) was obtained at the internal wall, as seen in **Image 6**. • A moisture reading of 22% WME was obtained approximately 2 meters from the wall in the brick floor, as seen in **Image 7**. • A moisture reading of approximately 34% was obtained along the entire length of the glass windows and sliding door, as seen in **Image 8**. The presence of moisture was again confirmed upon viewing the lobby areas with a thermal imaging camera, it was found that the wall and surrounding brick floor were already completely saturated, as indicated by the dark blue / purple regions, as shown in **Image 9**. The lower section of wall and surrounding brick floor were completely saturated at the time of inspection prior to any water testing occurring.	  

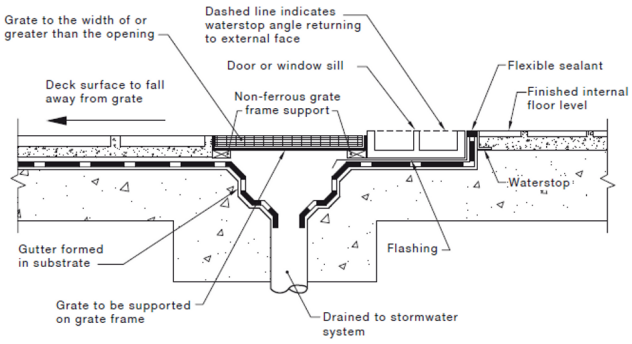
Item	Details	Photographic Details
		
		
		

Item	Details	Photographic Details
2.	**Location:** Basement - Car Parks G02 & G05. **Initial Conditions:** The leak is occurring above the car parking spaces G02 & G05, as shown in **Images 1 & 2.** A drip tray has been installed underneath part of the staining to the underside of the slab however this does not cover the full affected area. Since the original inspection for the Forensic Building Defect report, undertaken in June 2023, the overall condition of the underside of the concrete slab has deteriorated further. This was indicated by the increase of white efflorescent staining noted around a section of the leak, as seen in **Images 2 & 3.** Please note that **Image 2,** was not taken prior to the commencement of water testing. The leak is occurring below the wall and window/ opening threshold, mentioned in the previous item, as shown in **Image 4**.	  

Item	Details	Photographic Details
		

Item	Details	Photographic Details
3.	**Location:** Ground Floor Lobby. **Finding:** After emulating rainfall along the brick floor of the central walkway and base of the external wall for 10-15 minutes, as shown in **Image 1**, water was witnessed actively dripping into the basement car park below, as seen in **Image 2**. Video of this water ingress can be seen in **Video #1** in **Part 7: Videos**. This kind of ingress clearly demonstrates a point of failure in the waterproofing membrane system underneath the tiles or at the junction from the courtyard to the external wall of the property. On the other hand, there was no notable moisture increase to the surfaces inside the lobby, however, this is likely because the areas were already completely saturated before testing was conducted. After this area was tested, the rest of the external glazed wall was also water tested for approximately 10-15 minutes. The inside brick floor along the glazed wall was already wet before testing began and no notably difference in moisture content was recorded after testing concluded. **Performance Requirement FP1.4** of the **National Construction Code Volume One 2014** states: *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**.* **A building defect has been noted.**	  

Item	Details	Photographic Details
4.	**Location:** Ground Floor Lobby. **Finding:** It was noted at the time of the inspection that there was no visible provision for the upturn of the courtyard waterproofing membrane along the boundary of the lobby area and the external walkway, as shown in **Image 1.** The brick pavers installed throughout the courtyard appear to be continuous into the interior lobby of the building, as seen in **Image 2.** There is no separation or termination along the door threshold of the building to divide the external and internal areas. Upon review of the *CONSTRUCTION ISSUE* Architectural drawings, produced by *XXXX* drawing title " *External Finish To Entry Mat*", dated the XX/XX/2024 (Rev 02), **(Image 3)** it can be seen that the brick paving should be discontinuous between the internal and external areas at the entry door. This would allow the waterproofing membrane to be adequately terminated in order to prevent moisture from being able to spread beneath the surface level of the courtyard into the building. Unfortunately, none of these provisions have been installed and moisture is being transfered into the building beneath the brick pavers. The fixed glazing panels were noted to be installed in the floor in gaps between brick pavers, with no metal channel or angle being visible. It is not clear how the waterproofing membrane has been detailed at these junctions as there are no section drawings to indicate this transition and no membrane, channel or angle was noted on site. Due to the exterior and interior paved surface being one continuous system, sub-paver moisture is able to spread into the internal lobby area via capillary action, as shown in **Image 4** and **Image 5**.	  

Item	Details	Photographic Details
	Additionally, In the event of wind driven rain, surface water is easily able to bypass the building envelope and enter the lobby via the gap under the glazed door. Australian building regulations require there to be a physical barrier either via means of a hob, a strip drain or a metal angle between internal and external boundaries that are defined by windows / doors. This has not been achieved across the lobby opening and windows. **Clause 2.8.3, Doors and Windows Onto External Waterproofed Areas,** from **AS4654.2-2012, Waterproofing Membranes for External Above-Ground Use,** states: "*For doors and windows onto external waterproofed areas, the following apply:* *(a) sub-sill flashing shall be included as part of the membrane system (see Note 1.)* *(b)* ***where the internal and external finished floor levels do not allow an upturn, the membranes shall be fixed under the sill and terminate in the stormwater system (see Note 2)*** **Image 6** shows **Figure 2.9** from **AS4654.2-2012 - Waterproofing membranes for external above ground use**, which clearly illustrates the requirement for a strip drain to be installed at the opening junction of internal and external areas where the finished floor levels are the same. **A building defect has been noted.** **Recommendations:** See **Part#6** of this report.	   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

Part 3: Leak 2 - Basement - Car Space T07

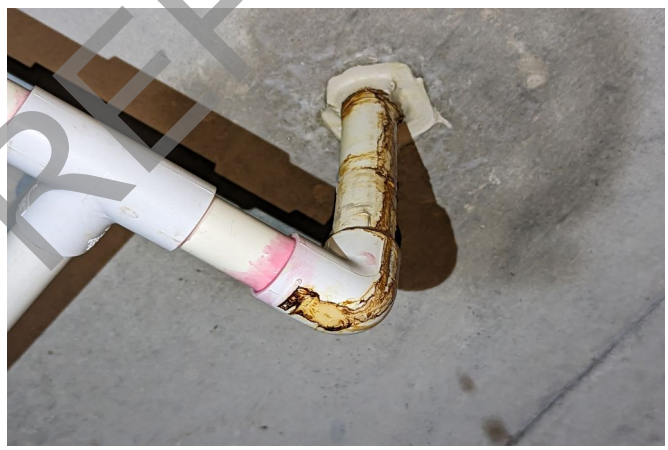
Item	Details	Photographic Details
5.	**Location:** Basement - Car Park T07. **Initial Conditions:** The leak is occurring above Car Park T07, as shown in **Image 1.** Since the inspection for Roscon's original Forensic Building Defect Report in June 2023, the overall condition of the leak remained relatively similar, as shown in **Image 2.** The area where water was originating was visually wet prior to testing so no measurements were taken with the moisture meter or thermal imaging camera. Additionally the drip tray was found to actively be holding water, as shown in **Image 3** The leak is occurring underneath the area shown in **Images 4 & 5** along the side of the central courtyards stairs. This water appears to be seeping from the cold joint between the two different sections of concrete. This makes sense as the area above is where the suspended slab changes level and stairs are used to access the lower central walkway. This matches with the drop in the ceiling hight seen in the basement car park below.	  

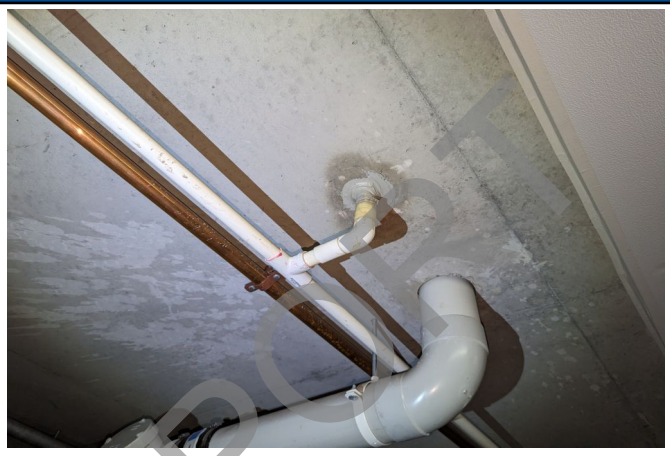
Item	Details	Photographic Details
		
		

Item	Details	Photographic Details
6.	**Location:** Basement - Car Park T07. **Finding:** After emulating rainfall on the raised planter area beside the central walkway for approximately 10-15 minutes, as shown in **Image 1,** water was witnessed actively dripping from this junction, as seen in **Image 2**. The rate of water discharge into the basement from this junction increased with water leaking from multiple points throughout this junction, as shown in **Image 2**. Video of this water ingress can be seen in **Video #2** in **Part 7: Videos.** This kind of ingress clearly demonstrates a point of failure in the waterproofing membrane system underneath the pavers of the central courtyard. This entire area above ground should be waterproofed in order to prevent the penetration of water beneath the pavers and allowing it to seep from vulnerable points into the basement. **Performance Requirement FP1.4** of the **National Construction Code Volume One 2014** states: "*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.***" **A building defect has been noted.** **Recommendations:** See **Part#6** of this report.	  

Part 4: Leak 3 - Adjacent to Car Space T06

Item	Details	Photographic Details
7.	**Location:** Basement - Adjacent to Car Park T06 **Initial Conditions:** It was noted at the time of inspection that there are numerous smaller PVC pipes coming from the ground floor suspended slab that are leaking throughout the basement car park, as seen in **Image 1** and **Image 2**. This particular pipe is adjacent to car parking space T06, as shown in **Images 1 & 2.** These pipes all appear to be irrigation provisions for the planter boxes installed throughout the central courtyard, as seen in **Image 3**. The planter shown here is the one directly above the pipe in **Image 1** and **2**. Prior to water testing, no measurements were taken with the moisture meter or thermal imaging camera. Dirt staining was noted around the neck of the pipe and directly underneath with the pipe itself being actively wet.	  

Item	Details	Photographic Details
8.	**Location:** Basement - Adjacent To Car Park T06. **Finding:** After emulating rainfall for approximately 5 minutes in this planterbox, as shown in **Image 1,** water was witnessed actively dripping from what is believed to be the inlet for the irrigation system, as shown in **Images 2 & 3.** Video of this water ingress can be seen in **Video #3** in **Part 7: Videos**. This kind of ingress clearly demonstrates a point of failure in the waterproofing system within the planter box itself. Furthermore, this failure was noted underneath most of the irrigation pipes. **Image 4,** shows another irrigation pipe which has been reverse sealed. This issue is systemic throughout the basement with many of these planter boxes showing signs of water leaking. **Performance Requirement FP1.3** of the **National Construction Code Volume One 2014** states: *A drainage system for the disposal of surface water resulting from a storm having an average recurrence interval of—* *(a) 20 years must—* *(i) convey surface water to an appropriate outfall; and* *(ii) avoid surface water damaging the building; and* *(b) 100 years must avoid the entry of surface water into a building.* **A building defect has been noted.** **Recommendations:** See **Part#6** of this report.	  

Item	Details	Photographic Details
		

Part 5: Discussion

An extensive forensic investigation was conducted to confirm the locations of water ingress into the basement below. The following section aims to summarise the findings of the investigation, discuss the effectiveness of provisional measures taken to address some of the leaks and touch on defects identified in the Roscon Forensic Building Defects Report, dated 01/09/2023.

First and foremost, it is clear now that there are little-to-no effective waterproofing provisions in place to stop surface moisture from entering the entry lobby area. Not only is there no hob and/or strip drain to mitigate wind-driven rain from entering the lobby, the tiled system that spans the external courtyard and internal lobby appears to be homogeneous. This is allowing sub-paver moisture, via capillary action, to make its way deep into the lobby area. Furthermore, this is causing efflorescent staining to develop along the boundary of the internal area where high moisture readings are present.

On the other hand, the water ingress into the basement above car spaces G02 & G05 and T07 are likely being caused by failures or deficiencies with the installation in the waterproofing membrane directly above the locations of the leaks.

Similarly, the staining emanating from the irrigation pipes penetrating the slab is being caused by an unobservable failure or deficient isntallation of the waterproofing system in the planter boxes themselves.

It is also worthwhile touching on the fact that drip trays have been installed underneath the leaks above car spaces G02 & G05 and T07. While drip trays may provide a temporary and makeshift solution to collect water and prevent direct dripping onto cars, they do not address the underlying issue of water penetrating through the car park roof slab and coming into contact with the steel reinforcement within the slab itself. Drip trays merely mitigate the immediate visible effects of leaks, they fail to resolve the root cause of water infiltration, which can lead to further structural problems over time. Proper waterproofing and comprehensive repairs are essential to address the issue effectively and ensure the long-term integrity of the structure. Without addressing the source of water ingress, the potential risks of reinforcement corrosion and ongoing deterioration remain unresolved, making it crucial to prioritize thorough remediation measures instead of relying solely on temporary measures like drip trays.

Likewise the attempts to reverse seal the irrigation pipe penetrations will not resolve the water ingress from the planter boxes long term. This is demonstrated by the fact that the penetration adjacent to car park T06 was made to leak despite the liberal application of a sealant around the underside of the penetration.

Roscon has previously identified a series of defects in the central walkway area; however, it is clear that no serious attempt to resolve the issues has been made. The following section summarises these findings, along with additional comments for further consideration.

- There are no expansion joints throughout brick paved / tiled system of the central walkway. This is not typical for brick / tiled systems of this size. A large section of brick pavers / tiles has been noted to be uplifting from the substrate.
- There are insufficient falls throughout the central walkway to convey surface water to drainage outlets. Water pools throughout the walkway as a result.
- No overflow provisions have been provided to the planter boxes throughout (excludes ones that are free-standing)
- Waterproofing membrane within the planterboxes does not terminate more than 100 mm above the soil line.
- Moisture is leaking through the junction boxes on the underside of the central walkway stairs. Strip lighting provisions have been removed and it is assumed water is able to enter the provisions for these cables.

Overall, it is important to keep in mind that the extent of the water leaks at the complex goes beyond what is discussed in this report. The aim of the scope of works provided in the following recommendations is to resolve all points of moisture ingress from the central walkway and planter boxes.

Recommended rectification actions have been outlined in the following section.

Part 6: Recommendations

1. Hydraulic Engineer to review the surface drainage provisions for the central walkway. Changes to how the stairways manage water may be necessary.
2. Remove soil and vegetation from planter boxes. Soil to be retained for reuse.
3. Disconnect and remove irrigation systems. Decommission all water services throughout walkway areas.
4. Remove all planter boxes, fences, gates and any other external furnishings used throughout the walkway.
5. Remove framing and glazing of openings / windows in both the Common and Private areas of the walkway.
6. Remove sections of external cladding around the perimeter of the courtyard to facilitate comprehensive waterproofing works.
7. Strip the walkway back to the bare concrete substrate. All tiles and screed to be disposed of.
8. Install strip drains at the base of openings / windows where there is no change of finish floor level between internal and external areas.
9. The walkway 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. Any works pertaining to the rectification of the underside of the slab should be carried out after the central walkway and planter boxes have been made completely water tight (unless specified otherwise by the Structural Engineer).
10. Top surface of 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.
11. 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.
12. Re-Install gates, fences and other furnishing's baseplates that need to be fixed in place prior to waterproofing.
13. Apply waterproofing membrane, in conjunction with the manufacturer's installation guide and **AS4654.2-2012 - Waterproofing membranes for eternal above ground use,** to the central walkway and planter boxes. See **Images 1 - 6** below which illustrate how the membrane should be terminated in different areas.
14. Re-Instate openings / windows in both the Common and Private areas of the walkway.
15. Re-Install the gates, fences and other furnishings to their baseplates.
16. Install tiles / pavers in conjunction with the manufacturer's installation guide and **AS3958.1-2007 - Ceramic tiles - Guide to the installation of ceramic tiles.** The builder is to ensure that expansion joints are installed at least every 4.5 meters.
17. Install external cladding around the perimeter of the courtyard in accordance with the manufacturer's installation guides.
18. Connect the irrigation supplies and turn back on all water services to the central courtyard.
19. Install protection boards to the planter boxes and fill them with the required soil and supply & plant new vegetation in accordance with the landscaping documentation.
20. Conduct acceptance testing, including flood testing of the central walkway and planter boxes, in accordance with **AS4654.2**
21. Drip trays below in the basement car park are to be removed, all staining cleaned away and concrete cracks/voids repaired as per the structural engineer. Underside of slab to be returned to good condition.

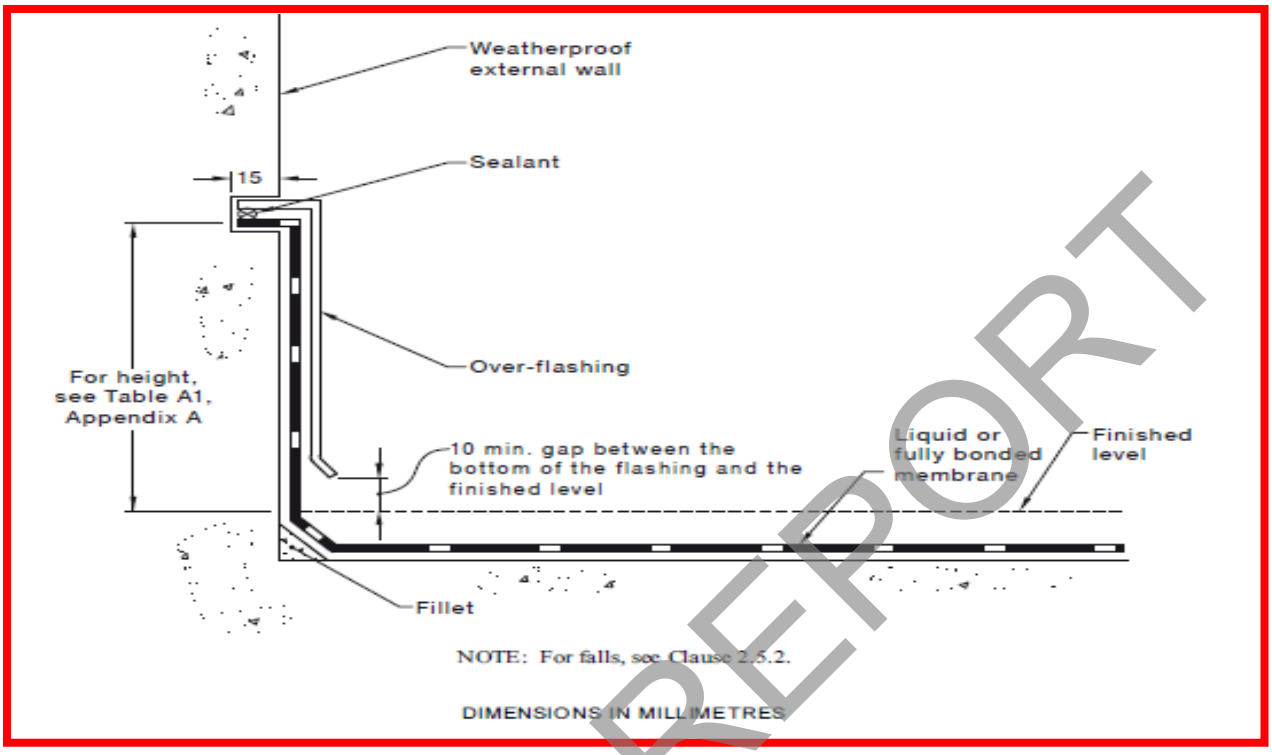


Image 1: Figure 2.2 Typical Vertical Upward Termination - Detail Of Over-Flashing For Liquid Or Full Bonded Sheet Membranes

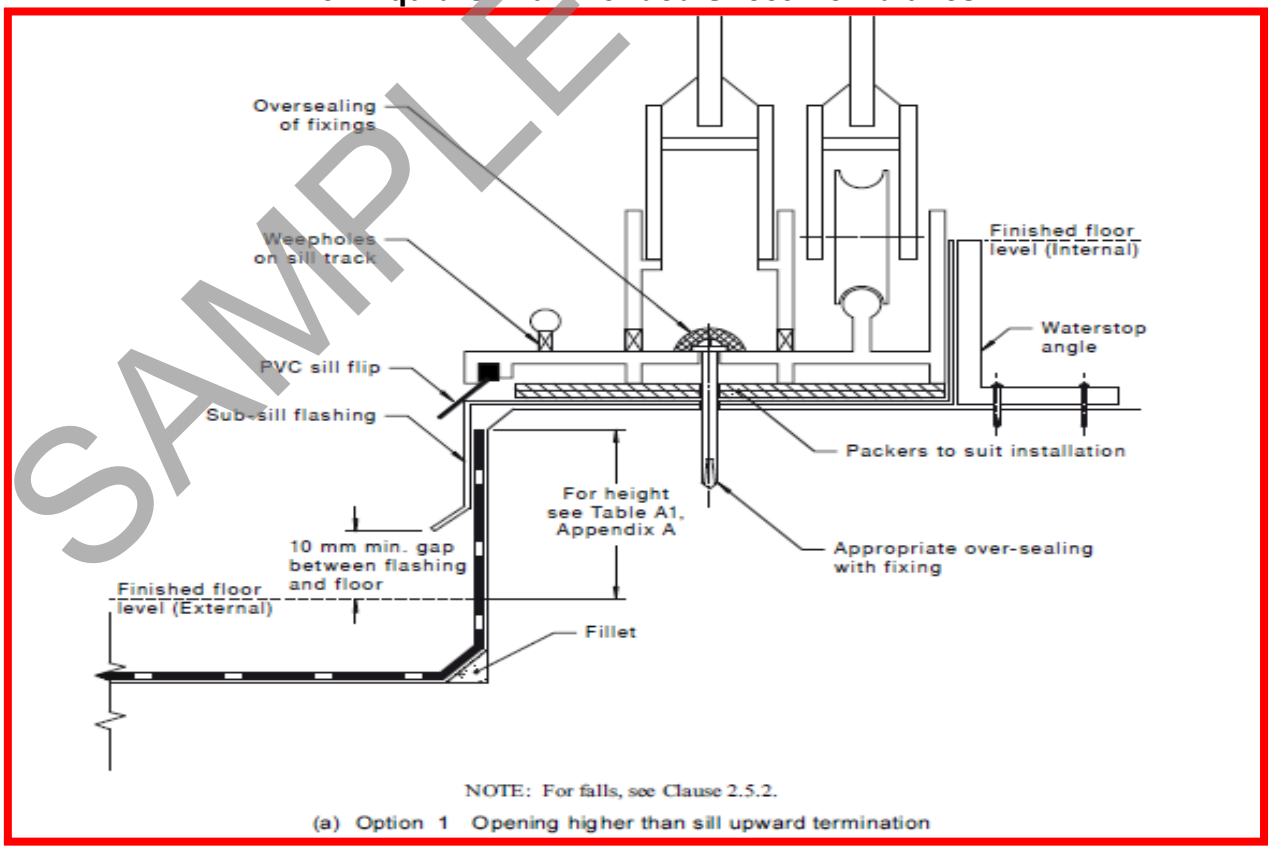


Image 2: Figure 2.8 (in part) Typical Details Of Membrane Termination At External Opening Doors.

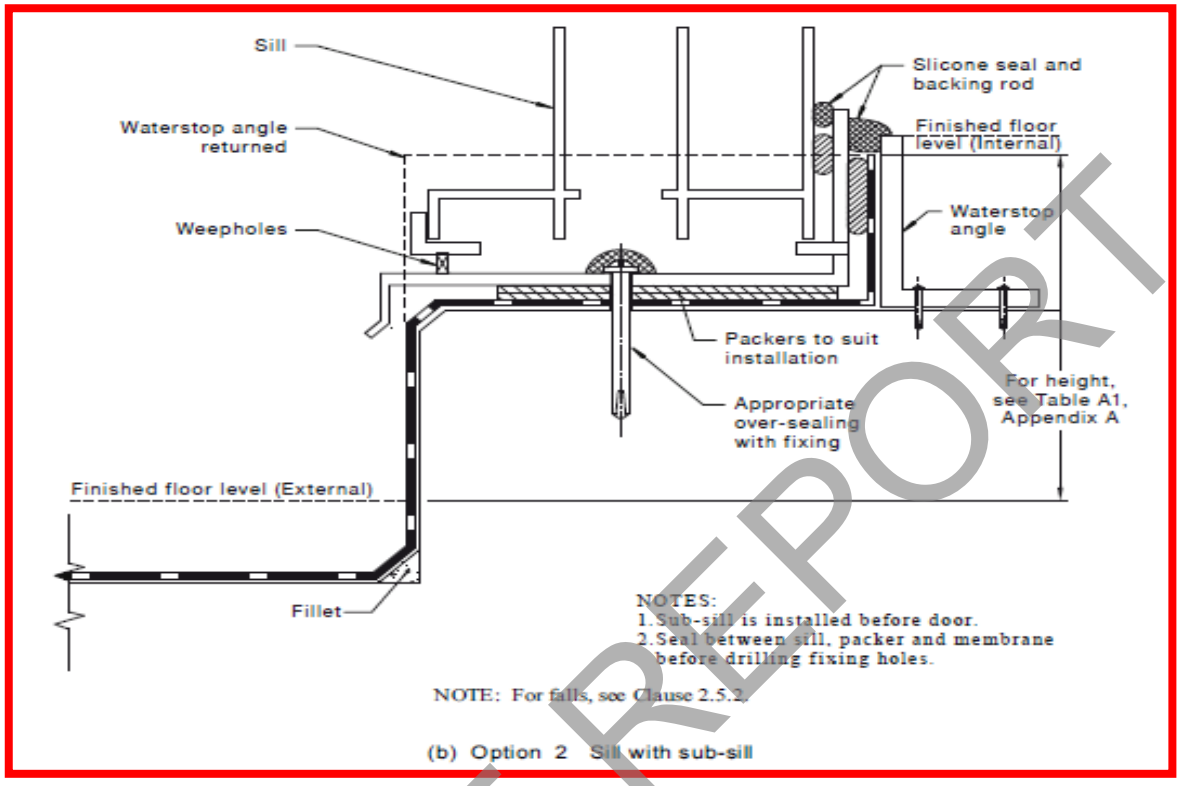


Image 3: Figure 2.8 (in part) Typical Details Of Membrane Termination At External Opening Doors.

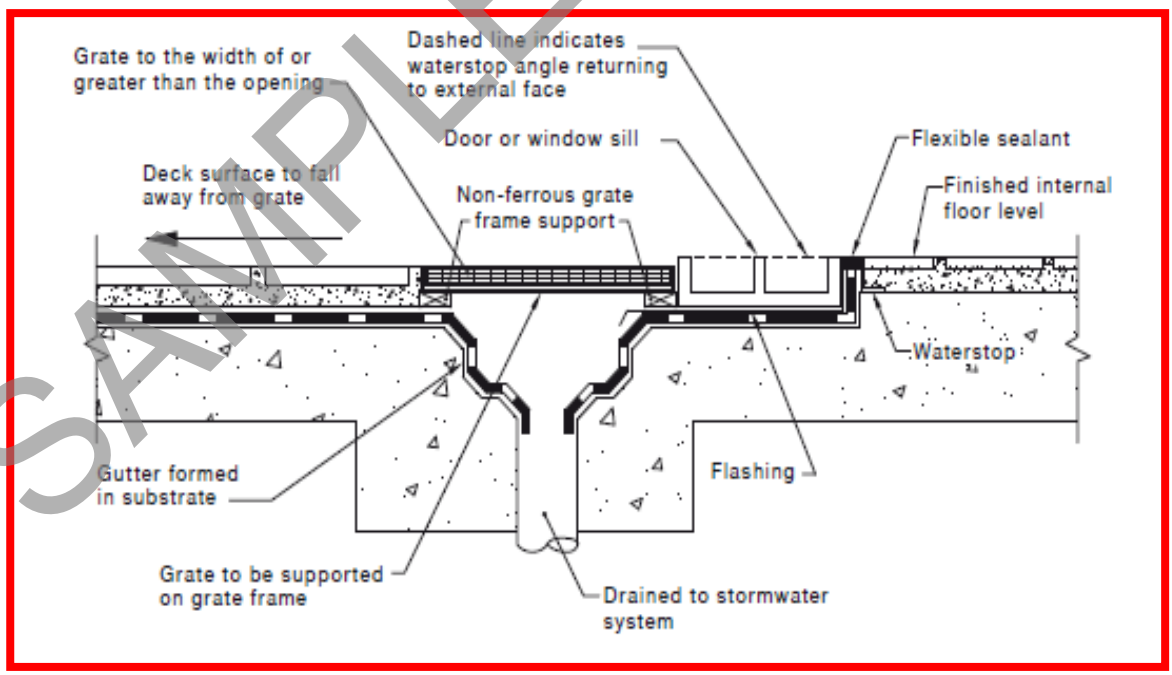


Image 4: Figure 2.9 Typical Details Of Membrane Termination At Wall Openings Where The Internal And External Finished Floor Levels Do Not Allow For An Upturn.

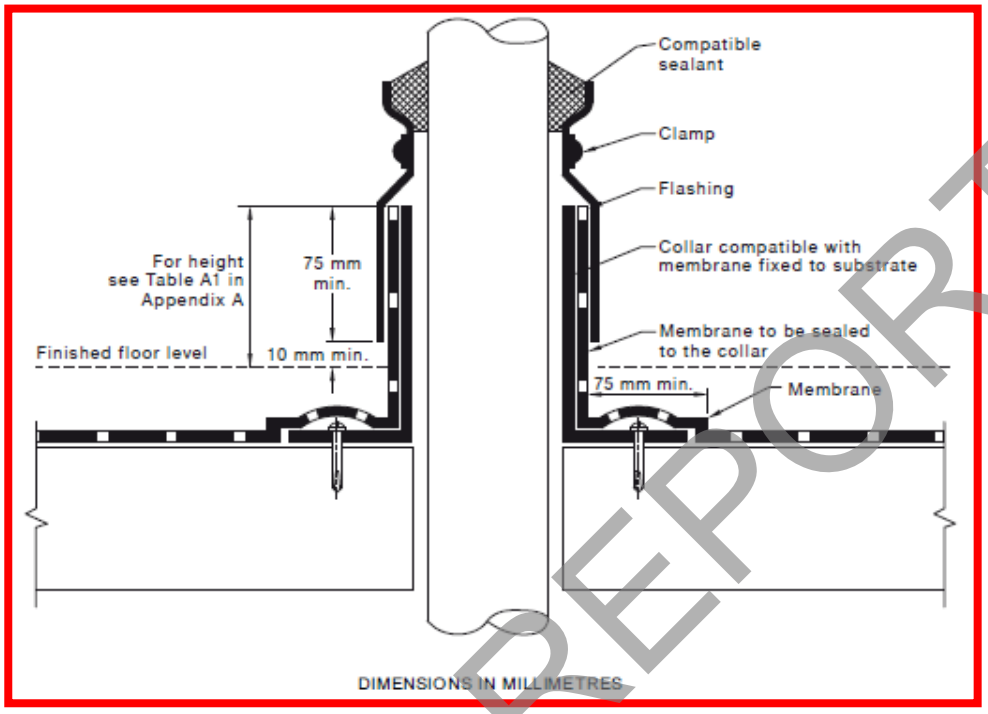


Image 5: Figure 2.10 - Typical Details Of Vertical Penetration Using A Collar.

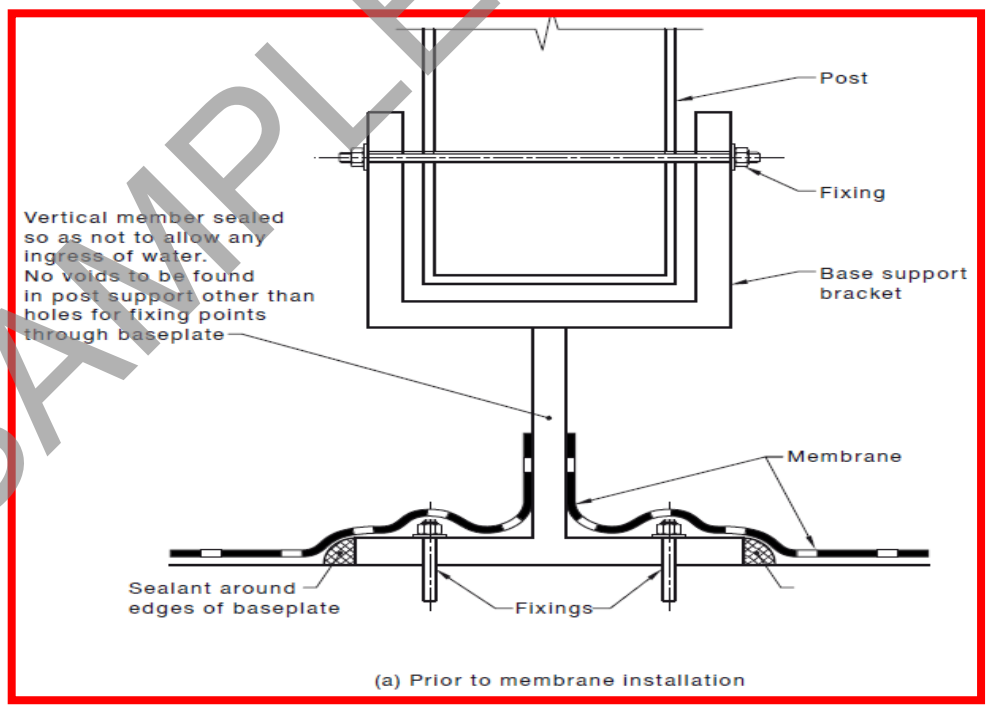
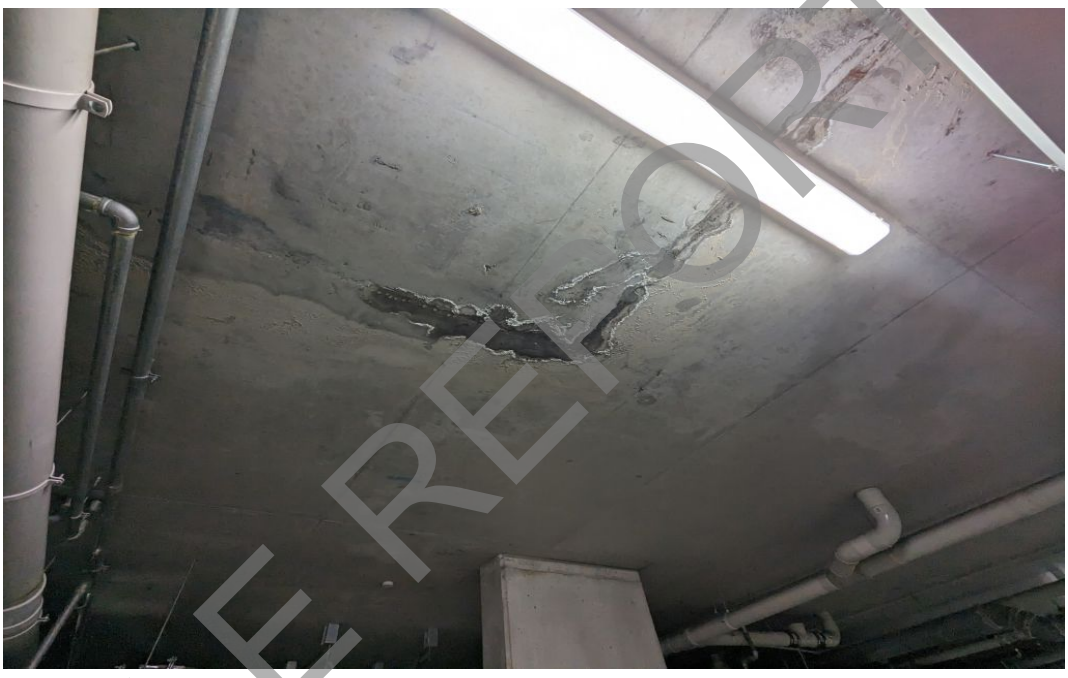
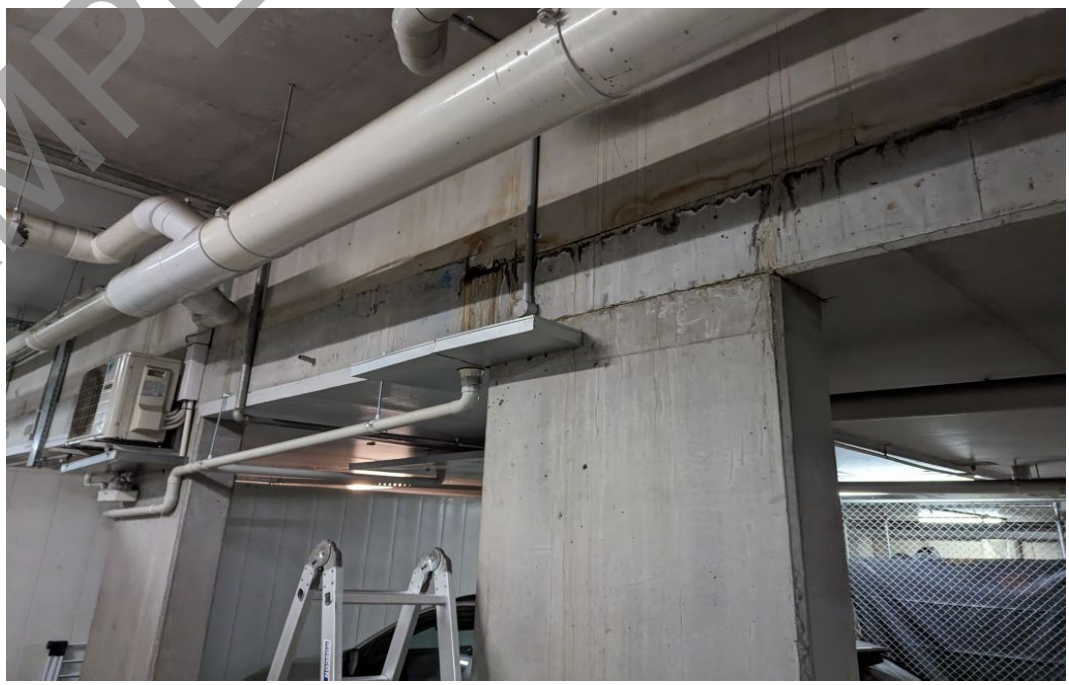


Image 6: Figure 2.12 (in part) - Typical Details Of Metal Post Support.

Part 7: Videos

Video 1	Video
Leak 1	
Video 2	**Video**
Leak 2	

Video 3	Video
Leak 3	

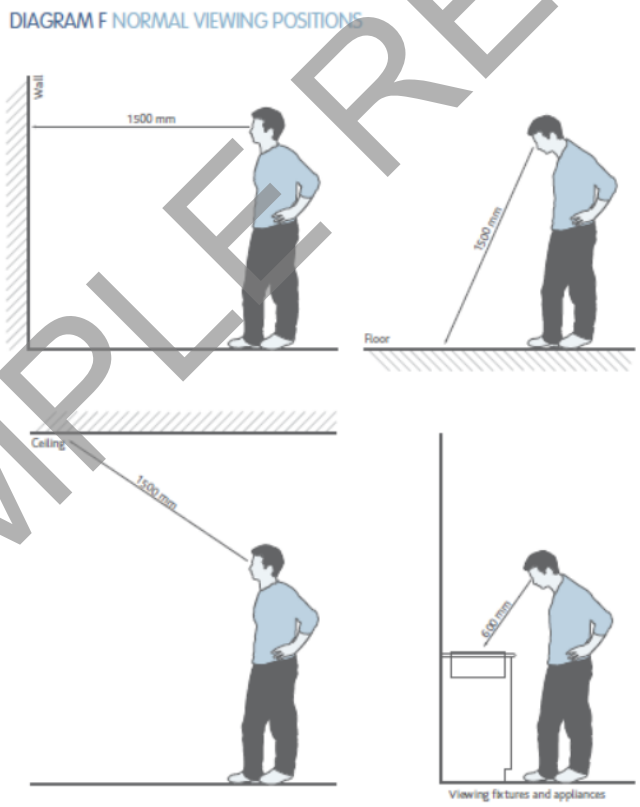
Terms and Conditions

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.



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 clauses 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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