**Observation**

*Photos Attached As Appendix*

Inspection was undertaken at the subject property in the presence of the Insured to which the following damage was noted:

## Leaking Pipe

1. According to the Insured’s advice, the leaking sprinkler manifold is located about the front elevation abutting the existing brick pavers. **Image 2**
2. Insured advised that initially upon noticing subsidence within the brick pavers and compromised doors/windows, they engaged a plumber who identified the aforesaid sprinkler manifold had been leaking.
3. Subsequently, the Insured noted the numerous damage within the entire property, which has progressively been exacerbated with time.

## External

1. We noted evidence of subsidence and movement within the brick pavers along the eastern (front) and northern elevations. **Images 3 - 8**
2. The Insured noted movement to the posts supporting the canopy, which also resulted in the separation of the canopy roof from the building's external brick walls. **Images 9 & 10**
3. From our inspection, we noted evidence of movement and rotation within the aforementioned columns.
4. In addition, we noted the posts have sustained long-term corrosion with evidence of material loss about the base.
5. Moreover, from our external inspection, no evidence of cracking to the external brickwork, with distinct diagonal tapered cracking at the base, particularly in the area adjacent to the pipe leak, which is an indication of short-term foundation subsidence was noted. **Image 11 - 16**

## Internal

1. Further to the above, we conducted a thorough inspection of the internal areas to which the following damage was reported by the Insured:

### Kitchen & Dining

1. Hairline cracking to ceiling lining directly above the A/C unit. **Image 17**
2. Hairline cracking to wall lining propagating from the top corner of the storage access panel. **Image 18**
3. Hairline cracking to the top corner of door opening between kitchen and living area. **Image 19**
4. Hairline cracking to the ceiling lining corresponding to the rebate walls above the fridge. **Image 20**

### TV Room

1. Hairline cracking to the wall lining local to the top corner of door and window openings within the TV room. **Images 21 - 24**
2. Cracking along the cornice and ceiling junction above the window opening. **Images 25 - 26**
3. Cracking along the cornice and ceiling junction above the fireplace. **Image 27**

### Lounge

1. Cracking to wall and ceiling lining corresponding to the staircase. **Images 28 - 30**
2. Cracking to wall lining corresponding to the doors and window openings. **Images 31 - 34**
3. Cracking to wall lining along the roof pitching beam supporting the rafters. **Image 35**
4. Cracking to the wall lining above the common wall between lounge and master bedroom. **Image 36**
5. Localised cracking along the skirting and wall junction.

### Master Bedroom

1. Cracking along the ceiling/wall junction square set. **Image 37**
2. Cracking to wall lining corresponding to the doors and window openings. **Image 38**
3. Jammed wardrobe doors. **Image 39**
4. Localised cracking along the skirting and wall junction. **Image 40**
5. Localised cracking to the ensuite shower floor tiles. **Image 41**

### Bedroom 1

1. Cracking to wall lining corresponding to the doors and window openings. **Images 42 - 44**
2. Hairline cracking below the supported beam about the mid-section of the bedroom. **Image 45**

### Upper Floor Bedrooms

1. Cracking to wall lining above the window opening. **Image 46**
2. Jammed bedroom timber doors. **Image 47**

### Upper Floor Bathroom

1. Localised cracking and delamination of bathroom skirting tile immediately adjacent to the shower screen. **Image 48**

**Discussion**

*Qualifications:*

*As previously mentioned, at this stage, we are not privy to the details of the plumbing report which has been requested but not received to date.*

*As such, we have made our inference on the cause of observed damage based on our visual non-destructive inspection and our structural assessment with reference to general engineering principles and current Australian Standards.*

*Should we receive a plumbing report, we will review our findings against the plumbers report and revert back with a revised report accordingly.*

## Damage Related to the Pipe Leak

### Subsidence to the Brick Pavers – Adjacent to the Leaking Pipe

1. From our inspection, we noted the pavers are laid directly on natural ground.
2. In saying this, the pavers are inherently susceptible to differential movement as a result of inadequate subgrade compaction at the time of construction, in combination with cyclic foot traffic over an extended period of time.
3. Moreover, we noted a lack of adequate drainage provision within the pavers, during general rainfalls, stormwater can permeate between brick pavers and over time, substrate material has been subject to cyclic saturation resulting in loss of bearing capacity.
4. In saying that, the cause of damage and subsidence within the brick pavers, are pre-existing in origin and attributable to inherent inadequate construction issues as outlined above.
5. However, in our opinion, it is plausible that the subsidence to the brick pavers within close proximity of the leaking pipe, predominantly the pavers along the **front (eastern) elevation** adjacent to the leaking sprinkler manifold, have exacerbated as a result of the escape of water.
6. In saying that, in our opinion, **the subsidence of the pavers within the “zone of Influence” of the leaking pipe, corresponding to the front (eastern) elevation has been exacerbated by the reported leaking pipe**.
7. For clarity, we have provided an annotated sketch under ***Appendix A***, highlighting the extent of pavers, which in our opinion, have been exacerbated by the leaking pipe.

## Damage Unrelated to the Pipe Leak

### Movement to the Canopy Structure

1. In our opinion, the movement within the columns supporting the canopy structure is pre-existing in origin and consistent with the long-term settlement of the existing footing system due to erosion of supporting soil and loss of bearing capacity, over an extended period of time.
2. In addition, we noted the current construction of the canopy structural framework, does not provide adequate lateral restraint, which can result in rotation of the slender columns subject to cyclic wind loading over time.
3. Considering the above, in our opinion, **the observed movement and rotation to the canopy columns are pre-existing in origin and attributed to the combination of the above factors, and are unrelated to the reported leaking pipe**.

### Internal Damage

1. In our opinion, the observed damage within other areas of the dwelling is not consistent with damage due to the claimed leaking pipe on the following basis:
   1. The dwelling has been constructed over a concrete slab on-ground which is not susceptible to differential ground movement due to its continuous rigid, raft function over the foundation material.
   2. The internal damage, in our opinion, was well outside of the expected influence zone that could be expected to affect a rigid slab on ground construction from the claimed leaking pipe.
   3. No damage and subsidence to the concrete slab-on-ground were evident which would be expected as a result of building movement due to the leaking pipe.
   4. Moreover, no evidence of diagonal (45° angle) tapered cracking within the base of the external brick walls were noted, which would be expected to occur as a result of foundation subsidence due to the experienced pipe leak.
   5. We refer to an extract from *Practical Guide to Diagnosing Structural Movement in Buildings* for *Leaking Drains and Water Discharge Near to Buildings*, attached in ***Appendix B***, which acknowledges that leaking pipework can be a cause of localised subsidence.
   6. The observed cracks occurred consistently throughout the dwelling and not propagating from a particular area about the leaking pipe.
   7. The observed damage within the internal building fabrics is consistent with general building movement due to thermal expansion and contraction of building fabrics.
2. In our opinion, the cause of the aforementioned damage at the subject property is not a result of the leaking pipe along the front side of the dwelling.
3. Conversely, **the observed damage is consistent with long-term general building movement and foundation reactivity and other factors unrelated to the leaking pipe or any single insurable event**.
4. In our opinion, the observed damage is superficial in nature and not demeaning to the overall structural integrity of the dwelling.
5. On this basis, the observed damage can be repaired accordingly without structural repairs or structural underpinning works.

**Conclusion**

*Qualifications:*

*As previously mentioned, at this stage, we are not privy to the details of the plumbing report which has been requested but not received to date.*

*As such, we have made our inference on the cause of observed damage based on our visual non-destructive inspection and our structural assessment with reference to general engineering principles and current Australian Standards.*

*Should we receive a plumbing report, we will review our findings against the plumbers report and revert back with a revised report accordingly.*

## Damage Related to the Pipe Leak

### Subsidence to the Brick Pavers – Adjacent to the Leaking Pipe

As detailed within the body of this report, in our opinion, the cause of damage and subsidence within the brick pavers, are pre-existing in origin and attributable to inherent inadequate construction issues.

Having said that, in our opinion, it is plausible that the subsidence to the brick pavers within close proximity of the leaking pipe, predominantly the pavers along the **front (eastern) elevation** adjacent to the leaking sprinkler manifold, have exacerbated as a result of the escape of water. – *Refer to* ***Appendix A***

**In saying that, in our opinion, the subsidence of the pavers within the “zone of Influence” of the leaking pipe, corresponding to the front (eastern) elevation has been exacerbated by the reported leaking pipe.**

## Damage Unrelated to the Pipe Leak

### Movement to the Canopy Structure

In our opinion, the movement within the columns supporting the canopy structure is pre-existing in origin and consistent with the long-term settlement of the existing footing system due to erosion of supporting soil and loss of bearing capacity, over an extended period of time.

Moreover, in our opinion, the current construction of the canopy structural framework does not provide adequate lateral restraint, which can result in the rotation of the slender columns subject to cyclic wind loading over time.

**Considering the above, in our opinion, the observed movement and rotation to the canopy columns are pre-existing in origin and attributed to the combination of the above factors, and are unrelated to the reported leaking pipe.**

### Internal Cracking

In our opinion, the observed damage within other areas of the dwelling is not consistent with damage due to the claimed leaking pipe on the following basis:

* 1. The dwelling has been constructed over a concrete slab on-ground which is not susceptible to differential ground movement due to its continuous rigid, raft function over the foundation material.
  2. The internal damage, in our opinion, was well outside of the expected influence zone that could be expected to affect a rigid slab on ground construction from the claimed leaking pipe.
  3. No damage and subsidence to the concrete slab-on-ground were evident which would be expected as a result of building movement due to the leaking pipe.
  4. Moreover, no evidence of diagonal (45° angle) tapered cracking within the base of the external brick walls were noted, which would be expected to occur as a result of foundation subsidence due to the experienced pipe leak.
  5. We refer to an extract from *Practical Guide to Diagnosing Structural Movement in Buildings* for *Leaking Drains and Water Discharge Near to Buildings*, attached in ***Appendix A***, which acknowledges that leaking pipework can be a cause of localised subsidence.
  6. The observed cracks occurred consistently throughout the dwelling and not propagating from a particular area about the leaking pipe.
  7. The observed damage within the internal building fabrics is consistent with general building movement due to thermal expansion and contraction of building fabrics.

In our opinion, the cause of the aforementioned damage at the subject property is not a result of the leaking pipe along the front side of the dwelling.

**Conversely, the observed damage is consistent with long-term general building movement and foundation reactivity and other factors unrelated to the leaking pipe or any single insurable event.**

In our opinion, the observed damage is superficial in nature and not demeaning to the overall structural integrity of the dwelling.

On this basis, the observed damage can be repaired accordingly without structural repairs or structural underpinning works.