## NORTHWOOD PTY LTD CONSULTING ENGINEERS ABN 28601642295. GREENWICH. P.O. BOX 5166 PH.0417080363 Email: Northwoodptyltd@bigpond.com Web: <u>northwoodptyltd.com</u>.au 3<sup>rd</sup>. of August 2021 stralia Pty Ltd and Hampic Management Pty Ltd.

Cinemeccanica Australia Pty Ltd and Hampic Management Pty Ltd. 17-19 Sydney Road, Manly. N.S.W. 2095 c/-MHN Design Union Pty. Ltd. BrianW@mhndu.com

### Re: EXISTING FAÇADE. 17-19 SYDNEY ROAD, MANLY.

Dear Sir/Madam,

### **1.0 INTRODUCTION.**

I inspected the two facades to the building at the above noted address on the 3<sup>rd</sup>. of August 2021. The purpose of this inspection was to report on façade structure. This report includes a summary of the issues that have required structural remediation over the last 10 years. This being the period for which I have been retained as the structural engineer for this property. For the purpose of reporting I refer to the Sydney Road façade as the northern façade and the Markey Place façade as the southern façade.

#### 2.0 ITEMS REQUIRING STRUCTURAL RECTIFICATION.

### 2.1.0 Northern Façade.

The northern façade has been constructed from a concrete, glass and steel framed ground floor with masonry walling with flyash lintels and corbels to the first and second storey levels.

Refer to the adjacent photograph 1.



# 2.1.1 Northern parapet.

The masonry parapet has significant cracking throughout. The majority of this cracking has been obscured by patching and painting.

The cracking at the parapet has

re-opened in the location shown in photograph 2.

The parapet has a lateral differential movement of 8mm in this location.

Refer to the adjacent photograph 3.





The east facing return of the northern façade is cracked over a length of approximately 4 metres.

This cracking allows moisture to enter the walling and affect the first floor masonry beneath.

Refer to photograph 4.

### 2.1.2 Northern lintels.

The second floor lintel and slab line has concrete cancer along the entire length. Moisture entering the parapet has passed through to this level.

This concrete has been extensively repaired and patched some 20 years ago. Significant portions of this repair have failed. These sections are drummy and will fall onto the awning below over time.

Refer to the bulging sections indicated on the adjacent photograph 5.





# 2.1.3 Northern corbels.

The first floor corbel has numerous cracks resulting from differential thermal movements.

These cracks in the concrete corbel have resulted in a failure of the paint system.

Refer to photograph 6.

## 2.2.0 Southern Façade.

The southern façade is of a similar construction to the northern façade. It has no corbels or awning.

Refer to photograph 7.





# 2.2.1 Southern lintels.

Severe corrosion of the steel lintels at the second floor level has lifted the parapet masonry and roof structure approximately 2-4 mm.



Moisture enters the second floor walling at this

location. The lintels require removal and replacement.

Refer to the above photograph 8.

The first floor lintels have been constructed from flyash and mild steel reinforcement. These lintels are severely affected by concrete spalling. Portions of the concrete fell onto the footpath approximately 5 years ago. The area was cordoned off and all remaining sections of loose concrete were removed by scissor lift access.

Structural steel lintels were placed to support the masonry façade and reinstate public safety. Refer to photograph 9.



All of the ground floor reinforced flyash lintels have corroded reinforcement. The ends of these lintels have all spalled resulting in a 'splayed end'.

All of these lintels require remediation to avoid spalling of concrete.

Refer to photograph 10.

## 2.2.2. Masonry walling.

The façade has moved differentially at the second floor level. This is most likely the result of failure and movement of the first floor lintel and flooring. Refer to photograph 11.





# 3.0 CHRONOLOGY. (Historical structural defects and future works.) TABLE 1.

	2006-2011	2011-2016	2016-	2021-2026	2026-2031
<b>.</b>			2021		
Item		D. I. C.	D 11		
Northern Parapet	Patching of cracking to the parapet.	Patching of cracking to the parapet.	Patching of cracking to the parapet.	Patching and stitching of cracking to the parapet.	Patching and stitching of cracking to the parapet.
Northern Lintels	Patching of cracking.			Remove failed patching of the second floor corbel. Repair corroded reinforcement and re-mortar and paint.	
Northern corbels	Patching of cracking to the first floor corbel.				Remove and repair corroded reinforcement and re-mortar and paint.
Southern lintels		Emergency bypass failed flyash first floor lintels with new steel angles and plate.		Steel second floor lintels require replacement. Flyash ground floor lintels require remediation.	Temporary steel first floor lintels. Remove damaged flyash lintel and re- pack between sound lintel remains and masonry.
Southern walling				Locally remove second floor flooring to assess connection with the façade masonry at the wall cracking. Stitch walling as a minimum.	

#### 4.0 CONCLUSION.

The second floor 'Market Place' façade steel lintels are severely corroded and require removal and replacement.

The first floor 'Market Place' façade flyash lintels are structurally inadequate and have been bypassed by the installation of temporary steel angles and plates. These lintels will require removal and replacement to provide a permanent structural support.

The ground floor 'Market Place' flyash lintels suffer from concrete cancer and require remediation.

The parapet of the Sydney Road façade suffers from ongoing cracking and has and will require maintenance on a maximum 5 yearly cycles.

The flyash lintels and corbels of this façade suffer from concrete cancer. Numerous sections are drummy. Maintenance is required to avoid sections of concrete and mortar from spalling off and falling to the street awning below.

The existing façade and its footing system will not be structurally adequate in providing support for new internal concrete flooring and masonry walls.

Both facades fail in their ability to prevent moisture from entering the premises due to ongoing differential movement cracking the masonry and paint systems. Both facades contain structure constructed with materials that are inappropriate for the location of this building. The life cycle of these materials has ended with several failures having taken place. I consider that these facades should be not be retained in any future development due to their poor structural condition and significant maintenance and strengthening costs if retained.

#### YOURS FAITHFULLY



NEIL WALSH

Bachelor of Engineering, Civil & Structural, Master of Engineering Science, Structural, Certified practicing Engineer Structural /Civil/Hydraulic & Member of the Institute of Engineers Australia.