

Our Ref: 1817702cRE 1-11 Oxford St Paddington- Development Proposal Structural Report Peer Review

## STRUCTURAL PEER REVIEW OF THE CONCEPT DESIGN SUPPORTING PLANNING PROPOSAL AT 1-11 OXFORD STREET, PADDINGTON

Author: Sumeer Gohil



Checker: Hari Gohil



Approver: Hari Gohil



### Version Information

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This report has been prepared for The City Of Sydney in accordance with the terms and conditions of appointment for The Structural Peer review of the concept design supporting planning proposal at 1-11 Oxford St, Paddington dated 18/6/19. shreeji consultant Pty Ltd (ABN 94 095 027 320) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party

## 1. INTRODUCTION

Shreejiconsultant has been engaged by The City of Sydney (CoS) to provide a peer review of the structural Concept Report prepared by BG&E. Doc No. S18117-BGE-RPT-001 REV / C DATE / 31/05/2019.

The objective of this peer review is to provide an assessment of the risks present with the structural solution proposed by BG&E in their report. Previously CoS has had incidents where facades which were originally identified as being retained in a development proposal were subsequently demolished or significantly modified due to other site conditions emerging during the construction process. The CoS would like to identify these risks from the outset of the development proposal process, and have them addressed by the developers to avoid the damage/demolition of the facade occurring during the construction process.

As part of this review the following additional documents referenced by the BG&E report have been also reviewed:

- Planning Proposal Architectural Drawings – Tonkin Zulaikha Greer Dated 22/05/2019
- Report on Geotechnical Assessment- Douglas Partners Project 86362.00 Dated 09/11/2018
- Heritage Impact Statement Amended Planning Proposal, prepared by Urbis Pty Ltd (Job Code: SH1099 – Report No. 09 dated 08/05/2019)
- City of Sydney email response to planning proposal request dated 25/03/2019

A site inspection of the site of the proposed development was undertaken on the 21/06/2019. The inspection was undertaken by Sumeer (Shreeji) accompanied by Peter Failes (CoS), Tim Wise (CoS), John Poulton (CoS), Daniel Barber, (CE Boston Hotels), Jason Shepherd (CE Boston Hotels), Tim Greer (TZG Architects), Jarrod Hughes(TZG Architects)

This site inspection was undertaken to familiarise ourselves with the property in question, it was not carried out as a structural inspection. There were observations made on the day which have implications in the retention of the facade. The observations included here are also not considered to be a complete list of the areas of risk identified, they are only provided for information. Similarly, the risks associated with the observations made have not been quantified, this was not part of the scope of works under which Shreejiconsultant has been engaged by the CoS.

## 2. OBSERVATIONS

### 2.1.

A general view of the site as seen from South Dowling St.



## 2.2.

On the southern facade of the building, the render is seen to be cracking in a regular pattern. The cause of this cracking is not identified, but could have potential implications on the stability or retention of the facade.



### 2.2.1.

On the southern facade, the lintels to the window are corroding. There is also the presence of vegetation growing within the facade.



## 2.3.

A general view of the southern facade, looking towards South Dowling Street to the west.





2.4.

The junction of the facade on the south west corner has a vertical crack present running from the upper level of the facade down to ground level.



2.5.

A detail view of the cracking at the rain head on the facade. The cracking is of significant size.



2.5.1.

When viewed from street level, the upper cornice of the facade appears to have a missing section of cornice, along with signs of other cracks present.



## 2.5.2.

Internally, the fire stairs opening out to Oxford St has a damaged lintel present, along with visible water damage to the building's interior render.



## 2.5.3.

Within one of the first floor art spaces, a regular linear crack is present at a lower level.



## 2.6.

Internally there are areas of the external facade which show signs of repair to the render to the internal face of brickwork.



## 2.6.1.

At the north west corner of the building adjacent to the front awning, a steel beam is present to assist in the fixing of the canopy tie rods.



## 2.7.

Water damage visible to the internal wall on the second floor toilets, at the location of the cracking identified previously to the south western corner of the building.



## 2.8.

Water damage to the internal render, as seen along the Oxford St facade, at the 2nd floor level.





2.9.

Cracking present in the archway at the eastern corner of the property on Oxford St, within the arched opening. This is a through crack in the brickwork.



### 3. COMMENTS

- 3.1. The structural proposal provided in the BG&E report for the property is considered to be **theoretically** a structurally feasible solution for the retention of the facade. The report however does not provide details of the risks associated with the proposed works, and methodologies to minimise these risks. Without this evaluation of the proposal, the report is not considered to be an adequate evaluation of the facade retention process.
- 3.2. The task of maintaining the structural stability of a facade whilst the internal walls and floors are demolished is a challenging process. It is a task that whilst not impossible, does require a significant amount of planning and resources to ensure it is executed in a safe and appropriate manner.
- 3.3. This property is located on a challenging site due to the limited vehicular access, the close proximity of neighbouring properties to the site boundaries and the high volume of pedestrian traffic adjacent to the site. These site features, add additional hazards and risk to an already highly complex high risk activity.
- 3.4. To be able to fairly evaluate the validity of the proposed structural solution, a risk management plan should be created, to identify the methodology of managing the risks associated with the facade retention process.
- 3.5. The following items are not adequately quantified in the BG&E report. By providing more detail to the following items, it will be possible to provide a risk management plan for the works proposed. The following comments are examples of additional items that should be considered, but is by no means an exhaustive list of the items that need to be expanded upon;
  - 3.5.1. **The existing site/ building condition;** There were site conditions seen during the site visit which need to be evaluated when considering the safety of the proposed facade bracing proposal. The existing locations and types of footings for the external walls are assumed.
  - 3.5.2. **Externally constructed facade support frames;** These frames rely on the creation of new foundations to brace and support the support frames, the ground conditions in these external areas can be difficult to control, what is the feasibility of these foundation being constructed to an adequate requirement? What level of redundancy is built into the external bracing, the site is exposed to high volumes of vehicular traffic at a close proximity, what are the implications of vehicular impact with the external bracing?
  - 3.5.3. **Internally constructed facade support frames;** The internal frames require stable footings to be created in areas where works are planned, how is this process managed?.
  - 3.5.4. **Underpinning of the Southern facade;**What is the proposed method of under pinning the facade? What are the risks associated with these methods.

- 3.5.5. **Permanent stabilisation frame;** Details for the new stabilisation frame to be installed in the southern courtyard, to stabilise the southern facade should be provided.
- 3.5.6. **Perimeter piling;** What are the expected deflections of the piling, what are the effects of the piling on ground water and subsequent long term settlement of the properties foundations and surrounding properties.
- 3.5.7. **Surcharge on the Busby Bore;** The depth of Busby's Bore within the property boundary is based on assumptions from other site conditions. An accurate depth of the Bore is not yet known for this location. Whilst the structural design indicates that the depth of excavation is above the zone of where excavations are not permitted for Busby's Bore, the report does not take into account the surcharge effects from the proposed footings that will sit on top of the Bore location.
- 3.6. The geotechnical report being used for the initial works is a desk top survey, whilst this is a reasonable approach to provide a general feasibility approach for works, it does not adequately quantify the risk associated with the variable site conditions.
- 3.7. The proposal to underpin the middle section of the southern facade, whilst also excavating for the new B2 level in this area is a high risk task.
- 3.7.1. There is a lack of detail from the structural report (as identified above) with respect to how this will be carried out onsite.
- 3.7.2. From our past experience with other developments of a similar nature, where excavation under an existing wall is required, combined with the creation of new basement level openings into an existing facade as well as extension of an existing basement, the existing wall will likely require demolition and rebuilding. It is difficult to understand how these works would be carried out without creating significant instabilities in the existing wall, without propping and temporary support to such a great extent that other works to the area would be hindered. If the intent is to retain the southern facade, then the most practical solution for this is to reduce the extent of excavation adjacent to the existing foundations, and to minimise the need to undermine the existing wall.
- 3.8. CoS's requested amendment to the original planning proposal lodged, included that the planning proposal and supporting concept design be based on retaining the main structural form of the building; the major demolition and excavation be restricted to within the auditorium space and the retained building fabric be adaptively reused, to ensure the structural/heritage integrity of the building (see City of Sydney response to planning proposal request)
- 3.8.1. This proposal from CoS, is a lower risk option, compared to the Concept proposal.
- 3.8.2. The proposal from CoS is considered to be a better option for modification of the building with respect to the Burra Charter. As the CoS proposal retains more of the original material and form of the building, it is more in line with the Burra Charter compared to the concept proposal.
- 3.8.3. The retention of the internal walls provide structural stability to the facade of the building, in a manner that the original structure was designed. The introduction of a completely new structural system to support the facade of the original building is not respecting the original building design, and is not an adaptive reuse of the existing structure.
- 3.8.4. By retaining the internal walls, it would be possible to relocate the proposed external bracing for the facade to within the property boundaries. By moving the bracing to within the property boundaries, the support framing can be designed to work in conjunction with the existing internal walls to provide the structural stability required to retain the facade.

#### 4. RECOMMENDATIONS

- 4.1. The preferred development proposal outlined by CoS is recommended to be adopted for the development to this site.
- 4.2. An existing structural condition report should be undertaken by the structural engineers to quantify the risks posed by the proposed structural modifications to the property.
- 4.3. The existing footing depths and types should be confirmed, as these have a significant impact on the proposed retention system designs.



- 4.4. An existing condition report of Busby's Bore should be undertaken with a remote camera survey within the Bore, this survey will also allow for an accurate placement of the Bore within the site, and identify the surcharge effects from the proposed footing systems in this location.
- 4.5. A detailed geotechnical inspection should be undertaken to allow for site specific information to be provided. The geotechnical investigation is to provide information for the proposed placement of foundations for the facade support frames, as well as long term soil conditions following the installation of the proposed retaining wall solutions.
- 4.6. A risk management plan for the proposed structural works should be provided. The risk management plan will provide guidance on the risks of the structural proposals and the methods to be used to manage these risks.
- 4.7. Based on the findings from the above reports, the most suitable method for creating the retaining walls can be determined. This information can be used to provide information on the offset of the retaining wall from the existing footings.



Sumeer Gohil  
for shreeji consultant p/l