BEFORE AN INDEPENDENT HEARINGS PANEL
IN CHRISTCHURCH

TE MAHERE Ā-ROHE I TŪTOHUA MŌ TE TĀONE O ŌTAUTAHI

UNDER	the Resource Management Act 1991 (the **RMA**)
AND	
IN THE MATTER OF	of the hearing of submissions on Plan Change 14 (Housing and Business Choice) to the Christchurch District Plan

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STATEMENT OF REBUTTAL EVIDENCE OF STEPHEN HOGG ON BEHALF OF CHRISTCHURCH CITY COUNCIL

HERITAGE ENGINEERING

CITY-WIDE QUALIFYING MATTERS: HISTORIC HERITAGE

HARLEY CHAMBERS AND DARESBURY HOMESTEAD

Dated: 9 October 2023

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EXECUTIVE SUMMARY

1. This rebuttal evidence relates to two listed heritage buildings, Harley Chambers and Daresbury House.

2. Two issues have been raised relating to Harley Chambers in the evidence of Mr Keeley Pomeroy and Mr Brett Gilmore on behalf of Cambridge 137 Limited (submitter #1092). The issues relate to:

   (a) the estimation of scope of repair included in the repair estimate costing for the Harley Chambers building evaluated by Mr Pomeroy; and

   (b) reasons for demolishing the Harley Chambers building provided by Mr Gilmore.

3. I consider the scope of repair relating to partial Level 1 floor replacement, included in the repair estimate costing evaluated by Mr Pomeroy, to be an overestimation of repair scope, not supported by damage assessment evidence.

4. I consider the reasons provided by Mr Gilmore for demolishing the Harley Chambers building are not valid, for reasons I explain below.

5. Two issues have also been raised relating the method of building repair for Daresbury House, in the evidence of Mr Gilmore on behalf of Daresbury Ltd (submitter #874). The issues relate to the proposed repair methodology used as the basis for the estimation of cost of repair.

6. I consider two alternative repair methodologies for the lower-level double and triple skin brick walls should not be disregarded based on adding additional weight to the structure, but should instead be correctly evaluated to determine if a more cost-effective repair solution using 100mm shotcrete overlay or a composite fibre overlay can be a viable alternative (despite being a heavier overall option than currently proposed).

INTRODUCTION

7. My full name is **Stephen James Hogg**. I am employed as Technical Director, Buildings at Aurecon's Christchurch office.

8. I prepared a statement of primary evidence on behalf of Christchurch City Council (**Council**) dated 11 August 2023. My primary evidence addressed

structural engineering matters, as set out in that evidence arising from the submissions and further submissions on Plan Change 14 to the Christchurch District Plan (the **District Plan**; **PC14**).

9. I have the qualifications and experience set out at paragraphs [12] – [15] of my primary evidence dated 11 August 2023.

10. I repeat the confirmation given in my primary evidence that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023, and that my evidence has been prepared in compliance with that Code.

SCOPE OF REBUTTAL EVIDENCE

11. In preparing this rebuttal statement, I have read and considered the evidence filed on behalf of submitters, as that evidence relates to my primary evidence concerning Harley Chambers and Daresbury House, including the:

    (a) Statement of evidence of Mr Pomeroy on behalf of Cambridge 137 Limited, in particular paragraphs 27 and 29;

    (b) Statement of evidence of Mr Gilmore on behalf of Cambridge 137 Limited, in particular paragraph 66; and

    (c) Statement of evidence of Mr Gilmore on behalf of Daresbury Limited, paragraphs 29.1 and 29.2.

OVERESTIMATE OF SCOPE OF REPAIR WORKS FOR HARLEY CHAMBERS

12. Mr Pomeroy has provided evidence of the cost estimates for the various development options for Harley Chambers to account for the additional repair work now required. At paragraph 27 of his evidence Mr Pomeroy states that additional damage was caused to the building by a fire in the south-west corner of the north section of the building and provides an estimate of the cost for repairing that damage.

13. The extent of fire damage to the level 1 floor slab in the south-west corner of the north section of the Harley Chambers building caused by the fire at ground floor level has not been structurally evaluated. I consider it as an overestimation of scope of repair to allow for the partial demolition and replacement the 200mm wide ribs and topping slab in this area. I consider this method of repair requires a structural engineering assessment if it is to

be included in repair cost estimates. Less intrusive repair methodologies can be included with less intrusive means which retain the existing level 1 floor slab in place if there is structural concern about the post fire condition of the floor.

14. In my opinion, based on my observations of this area of the Harley Chambers building, I consider the extent of repair to the floor will be limited to cleaning up surficial smoke damaged surfaces.

REASONS PROVIDED FOR DEMOLISHING HARLEY CHAMBERS

15. Mr Gilmore discusses the extent of structural damage to the Harley Chambers building and gives his opinion that, while it is possible to repair Harley Chambers, the building should be deconstructed (for the reasons set out at paragraph 66 of his evidence).

16. I disagree with the reasons that Mr Gilmore provides for why the Harley Chambers building should be deconstructed. I have restated Mr Gilmore's reasons below in italics and provided my brief response to each of these.

(a) If the north-east corner of the building is not to be temporarily propped then it could partially collapse in its current condition under moderate earthquake shaking.

17. The north-east corner of the building can be temporarily propped to secure it from the risk of partial collapse in a moderate earthquake. Mr Gilmore agrees with this methodology as noted in paragraph 123 of his evidence, and previously recommended that temporary propping be installed to the north-east column in December 2016.[1] I do not agree that this is a reason for total building demolition.

(b) The concrete canopy apron directly adjacent to the east side footpath is significantly cracked, and if not propped, could partially collapse under moderate earthquake shaking.

18. Make safe temporary propping can be installed to eliminate this risk. Mr Gilmore partially agrees with this methodology as noted in paragraph 124 of his evidence. I do not agree that this is a reason for building demolition.

[1] Statement of Evidence of Mr Brett Gilmore, at paragraph 17.

(c) In the long term, without substantial engineering works, the building will continue to degrade.

19. I agree in the long term, without substantial engineering works, the building will continue to degrade. However, in the short term of several years I do not consider the building is at risk of partial collapse under gravity loading or moderate earthquake loading if recommended temporary securing works are completed. Additional securing works can be completed to provide additional redundancy for longer term risk if required. I do not agree that this is a reason for building demolition.

(d) It was evident during my inspection that the building was being occupied by unauthorised people. This is a concern given the structural conditions of the building, and also that the internal environment is a health hazard.

20. Additional security measures are necessary to be installed to prevent unauthorised access. If effective security can be provided to prevent unauthorised access, then I do not agree that this is a reason for building demolition.

(e) Other risks in the building include falling debris (ceilings, plaster, damaged breeze blocks), brick parapets to the rear sides of the building, asbestos in some materials, and the basement remains part filled with water (…) the presence of both asbestos and toxic moulds (…).

21. In my opinion this raises concerns that additional security measures should be installed without delay to prevent unauthorised access to the building. If effective security can be provided to prevent unauthorised access then I do not agree that this is a reason for building demolition.

(f) Since 2016, further unauthorised persons have caused a fire to the interior of the building resulting in some weakening of the structure. Any further occurrences such as this could result in more severe damage to the building and injury to people.

22. In my opinion this raises concerns that additional security measures should be installed without delay to prevent unauthorised access to the building. If effective security can be provided to prevent unauthorised access, then I do not agree that this is a reason for building demolition.

(g) The building should not be entered without full personal protective equipment, and that is enforced by the current owners.

23. I do not agree that this is a reason for building demolition.

(h) The poor condition of the brick parapets to the rear sides of the building mean that there is a safety risk to the fire egress path of the adjacent building (…)

24. The parapets can be temporarily or permanently secured to resist seismic loads to enable safe area below the parapet in the adjacent building. I do not agree that this is a reason for building demolition.

(i) It is evident that the heritage features of the façade are now extensively damaged. This follows the apparent ongoing degradation of the building exterior as ongoing differential thermal effects and weathering appear to degrade the exterior plaster/concrete at the crack and joint locations.

25. A repair and strengthening project will require the façade and its feature to be reinstated. Reinstatement of the façade is entirely possible. This would involve partial replacement, concrete repair, new plaster and moulding to match original, crack injection and making good. This is a normal process for heritage building refurbishment. I do not agree that this is a reason for building demolition.

CONSTRUCTION ALTERNATIVES FOR REPAIR OF DARESBURY HOUSE

26. At paragraph 29.1 of Mr Gilmore's evidence on behalf of Daresbury Limited he comments on the alternative options for the repair of various parts of Daresbury House that I noted in my evidence.

27. Mr Gilmore provides reasons for why possible construction alternative using 100mm shotcrete (as I suggested in my evidence) should possibly be disregarded. I have restated Mr Gilmore's reasons below in italics and provided the rebuttal to each of these to provide clarity on this alternative.

"The application of a 100mm thick shotcrete skin increases the thickness of the wall and decreases the size of the internal space."

28. In my view this can be partially offset by encroaching the 100mm skin into the 75mm thick timber framing which is fixed to the interior face of the double or triple skin brick walls. I would expect it reasonable that 50mm of the 75mm

depth to be replaced with shotcrete so increasing the net wall thickness by 50mm not 100mm.

"The additional shotcrete adds some weight to the structure and also means that the seismic weight of the brick wall is also not reduced (…)"

29. The shotcrete layer applied to the inside face of the exterior walls is proposed on the basis that the double and triple brick walls do not need to be demolished and removed thus provides a significantly simpler method for adding in plane and face load strength to the walls without requiring the extensive temporary propping of the upper level if the brick walls are removed. In my opinion, this method could offer savings on construction timeframe, cost and seismic stability during construction.

30. I agree that the seismic bracing scheme and diaphragm detailing proposed by Mr Gilmore would need to be revised from the original proposed scheme due to the increase in building weight. However, I do not consider it reasonable to disregard this option because of added weight as I consider it achievable and can offer significant advantages in leaving the lower-level walls in place therefore demolition and temporary propping is significantly reduced, ease of construction and improved safety and temporary seismic stability during construction.

31. I consider there is sufficient difference in approach that the alternative I propose should be evaluated further if building repair is considered financially feasible.

CONSTRUCTION ALTERNATIVES TO STRENGTHEN DARESBURY HOUSE

32. At paragraph 29.2 of Mr Gilmore's evidence on behalf of Daresbury Limited he comments on the alternative options for strengthening Daresbury House that I noted in my evidence.

33. The reason that Mr Gilmore provides for why the possible construction alternative of using composite fibre overlay should possibly be disregarded is restated below in italics and provided rebuttal to provide clarity on this alternative method.

"The retention of the thicker heavy brick will result in a higher seismic weight at the lower level than currently allowed for in my strengthening methodology, but the increase is less than for the shotcrete skin system. (…)"

34. I agree that the seismic bracing scheme and diaphragm detailing proposed by Mr Gilmore would need to be revised from the original proposed scheme due to the increase in building weight. However, I do not consider it reasonable to disregard this option because of added weight as I consider it achievable and can offer significant advantages in leaving the lower-level walls in place therefore demolition and temporary propping is significantly reduced and the interior dimensions and features of the rooms can be restored to original.

35. I consider there is sufficient difference in approach that the alternative I propose should be evaluated further if building repair is considered financially feasible.

Stephen Hogg

9 October 2023