

CC/MR
12721
6 February 2017

Carolyn McNally
Secretary
Department of Planning and Environment
320 Pitt Street
SYDNEY NSW 2000

Attention: Jane Flanagan

Dear Ms McNally

**SHELL HOUSE FAÇADE CONSERVATION CONDITION
SSD 5824 (MOD 3) - ONE CARRINGTON STREET, SYDNEY**

Following the further correspondence from the City of Sydney in relation to Modification 3 to SSD 582 (dated 13 January 2017, attached), Brookfield and its consultant team has undertaken a review of Council's proposed draft Shell House Façade Conservation Condition. Brookfield has also met with the City of Sydney on a number of occasions to address the items raised in the correspondence. Whilst the draft condition is acceptable in principle, Brookfield has the following requested changes as a result of the further work undertaken by Adriel Consultancy 'Strategy document for the processes to be undertaken to achieve the conservation of the heritage facades' (see **Attachment A**).

SHELL HOUSE FAÇADE CONSERVATION

(a) Excluding minor demolition required for investigative works and installation of the façade retention system, prior to the issue of a construction certificate in relation to the demolition of the additional internal structure and floors of Shell House including the Clock Tower, approved under Section 96 (Mod 3), the following is to be submitted to the satisfaction of the Manager Heritage and Urban Design City of Sydney:

Reason: Minor demolition is required, along with the façade retention system, in order to be able to complete the necessary investigative works required to satisfy the other parts of this condition.

(i) ~~The Shell House Façade inspection report by Arup, dated 8 January 2016, is to be translated into a façade action plan that includes a schedule of conservation works to be undertaken as part of the project works, in relation to the glazed terracotta façade conservation.~~ A Shell House Façade Condition Survey Report will be prepared by a specialist conservator and supported by appended reports from specialist structural and façade engineers as relevant. The report must address all the matters outlined in Section 1.0 of the Shell House - Strategy Document for the Heritage Façade Conservation prepared by Adriel Consultancy dated 26 January 2017.

Reason: The Shell House - Strategy Document for the Heritage Façade Conservation prepared by Adriel Consultancy now provides a better framework to inform the future conservation report.

(ii) ~~The works scheduled are~~ report is to ensure that the glazed architectural terracotta façade system is conserved to a high standard of visual and physical

performance. The report is to include schedules which outline ~~is to identify~~ terracotta blocks to be replaced, terracotta blocks to be repaired, and pointing to be replaced as identified from the façade condition survey. The façade condition survey is to be translated into the Schedule of Conservation Works as noted in (b)(i). ~~and works required to the underlying steel support components and steel structure.~~

Reason: The full extent of façade sub-frame condition can only be understood upon the erection of the full perimeter scaffold. These works have been included in condition (b) and included in the Schedule of Conservation Works as outlined in Section 2.0 of Shell House - Strategy Document for the Heritage Façade Conservation.

(iii) Where the condition of a block is identified as requiring replacement in accordance with the Section 2.1 of the Shell House - Strategy Document for the Heritage Façade Conservation prepared by Adriel Consultancy dated 26 January 2017, ~~as being cracked or having more than 10% of the glazed face of the unit to be detached or cracked,~~ the block is to be replaced.

Reason: The Shell House - Strategy Document for the Heritage Façade Conservation provides a more detailed and considered methodology for determining when a block should be replaced.

(iv) The proposed method of glaze repair is not to be reliant upon the reduction of moisture content in the blocks. This means that mortar repairs are to be used in lieu of Edison Coating systems.

(v) The report schedule is also to nominate areas of all the facades that require further visual investigation and destructive investigation to be undertaken ~~prior to the additional demolition to Shell House noted in (a) above.~~ The investigation and testing is to identify underlying issues that may affect the long term visual and physical performance of the façade, that could not be identified in the preliminary visual investigations, including the underlying causes of failure of blocks, salt levels, corrosion levels of mild steel fixing components and structural steel, and jointing material that may contain contaminants. The additional investigations are to include the eastern, northern, and western façades and the clock tower facades.

(b) Prior to the commencement of façade remediation works and allowing for the submissions as noted in (c) and (d) ~~additional demolition to Shell House noted in (a) and allowing for minor demolition to occur to for the installation of the façade retention system,~~ the following is to be submitted to the satisfaction of the Manager Heritage and Urban Design City of Sydney:

(i) A Schedule of Conservation Works is to be developed from the previous condition report noted in (a)(i) which is to outline the extent of façade remediation works upon detailed inspection of the façade from the perimeter scaffold. The Schedule of Conservation Works shall be formulated as outlined in Section 2.0 of the Shell House - Strategy Document for the Heritage Façade Conservation prepared by Adriel Consultancy dated 26 January 2017.

(ii) Following from (b)(i) a Façade Action Plan is to be prepared which will form the consolidated document for all remediation works to the Shell House Façade. Documentation which shall form the Façade Action Plan are as noted within section 4.0 of the Shell House - Strategy Document for the Heritage Façade Conservation prepared by Adriel Consultancy dated 26 January 2017.

(iii) The results of further visual and destructive investigation of the glazed architectural terracotta façade system of Shell House,

(iv) The results of further visual and destructive investigation translated into the façade action plan in (a)(ii) above. The ~~revised façade action plan~~ Façade Action Plan is to be periodically updated as required is to include the conservation of all further defective components of the façade, evident as a result of further visual and destructive investigation in accordance with (a) (ii) to (v) above.

Reason: To reflect the detailed methodology established in the Shell House - Strategy Document for the Heritage Façade Conservation

(c) *Ordering of replacement terracotta blocks: The purpose made glazed architectural terracotta units are to be of matching unit sizes, profiles, and glaze. Prior to ordering of the terracotta blocks, **representative** samples are to be prepared for approval by the Manager Heritage and Urban Design City of Sydney.*

(d) *Prototypes: Prior to commencement of works ~~to a section of~~ the glazed architectural terracotta façade system, prototypes of block replacement, pointing, block repair, and steel component repairs (fixings, structure and windows) are to be prepared for that **representative** section for approval by the Manager Heritage and Urban Design City of Sydney.*

(e) *A Façade Maintenance Strategy for the on-going maintenance of the glazed architectural terracotta façade, including the requirement for annual façade inspection reports, is ~~to be prepared for approval by~~ **submitted to the satisfaction of** the Manager Heritage and Urban Design City of Sydney prior to the issue of any Occupation Certificate. The building is to be managed in accordance with the approved Strategy during occupation.*

(f) *All diagnostic work should be undertaken by specialist conservers and engineers.*

(g) *The proposed works are to be carried out in a manner that minimises demolition, alterations and new penetrations/fixings to the significant fabric of the existing building.*

(h) *All conservation and adaptation works are to be in accordance with the Articles of the Australian ICOMOS Burra Charter 2013.*

(i) *Appropriately qualified tradespersons (as appropriate) are to be commissioned who are skilled in traditional building and engineering trades to carry out the proposed scope of works to Shell House.*

(j) *The works in must be implemented to the satisfaction of the Manager Heritage and Urban Design City of Sydney prior to the issue of any Occupation Certificate for the building, known as Shell House.*

We also refer to Item 6 contained within the City's correspondence, and noting the Aluminium windows should be replaced by steel assemblies to match the existing. Make has consulted with the City of Sydney in relation to this item and confirmed:

- all windows within the lower darker toned and profiled faience base will be either fully restored or replaced to match the original windows; and
- this encompasses the semi-basement Wynyard Lane level, the raised ground Carrington Street level and the first floor level
- it is as per the approved elevations.

It is noted that Brookfield is continuing to work with Council to resolve its issues with Modification 4. Should you have any queries about this matter, please do not hesitate to contact me on 9956 6962 or mrowe@jbaurban.com.au.

Yours faithfully



Michael Rowe
Director



Adriel Consultancy

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SHELL HOUSE, CARRINGTON STREET, SYDNEY

STRATEGY DOCUMENT FOR THE PROCESSES TO BE UNDERTAKEN TO ACHIEVE THE CONSERVATION OF THE HERITAGE FACADES

This document sets out the proposed procedures and works that will be undertaken by the Principal, Brookfield Property Partners, the Principal Contractor, Multiplex Constructions and the specialist consultants and façade restoration sub-contractors engaged for the completion of works, regarding the heritage facades and the clock tower of Shell House, as part of the One Carrington Street Development, Ref SSD5824.

It demonstrates how the requirements set out in the City of Sydney letter to the New South Wales Department of Planning dated 13th January 2017, regarding Modification 3 are to be fulfilled.

The diagnostic work scheduled below is to be undertaken by the specialist engineers, subcontractors and conservators and identified.

The Conservation and Adaption works are to be in accordance with the Articles of the Australia ICOMOS Burra Charter.

SHELL HOUSE- STRATEGY DOCUMENT FOR THE HERITAGE FAÇADE CONSERVATION
ADRIEL CONSULTANCY PTY LTD

765 - REVISION 2: 26 01 2017

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1.0 FACADE CONDITION SURVEY & DOCUMENTATION

The facade elevations and the elevations of the clock tower will be surveyed to produce a comprehensive set of documentation which is to identify all faience blocks and other heritage facade elements which are to be remediated and/or replaced as identified in the condition survey. In addition to the condition survey, local areas of façade will be identified which are to be deconstructed for investigative works. These local areas are also to be identified as part of the façade condition survey documentation. Documentation will be suitable for locating and clarifying the full scope, inclusive of initial façade and structural investigation works, of all the external works and will be prepared, reviewed and amended over the duration of project at key milestones as outlined in the subsequent sections of this report.

The illustrative documents will be in the form of:

- a) Rectified photography, with additional line drawing details as required, or
- b) Line drawings in isolation.

An example of façade recording utilizing Rectified Photography is shown on the following page for reference. It is noted that this form of façade condition recording is common practice within the international community

The documents will be able to be reproduced at the relevant scales, such as 1:100 and 1:50, as required to either locate or identify the works.

A project specific numbering system will be developed which establishes a unique identifying code for each block.

The detailed documentation will be produced by Multiplex in conjunction with the selected specialist surveyor and the façade restoration contractor.

On completion of the façade works these drawings will be updated to provide a record of all the replaced and repaired blocks. These drawings will be included in the Façade Management Plan.

**EXAMPLE OF RECTIFIED PHOTOGRAPHY (ELEVATION PHOTOGRAPH TO SCALE 1:50)
USED FOR IDENTIFICATION OF FAIENCE REPLACEMENT AND REPAIR WORKS TO THE
FORMER REGENT PALACE HOTEL, PICCADILLY, LONDON (NICOLA ASHURST, ADRIEL CONSULTANCY)**



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2.0 SCHEDULE OF CONSERVATION WORKS

Following the initial condition survey as listed in Section 1.0 above, the facades will be inspected from scaffold in detail and further localised destructive testing will be undertaken to understand the underlying causes of defects.

The faience pointing will also be assessed as will the existing rainwater collection system and associated flashings.

The scope of work will be developed throughout the inspection period into a Schedule of Conservation Works.

2.1 THE REPAIR STRATEGY

The following repair strategy will guide the repair and replacement recommendations although it is anticipated that this may need to be reviewed and refined resulting from the additional information close-range inspections and the opening up works reveal.

- **Replace:**
 - Blocks without sufficient structural integrity inclusive of blocks required to be deconstructed for investigative works.
 - Façade blocks with cracking extent over and above an acceptable level as determined by specialist consultants, engineers and contractors.
 - Blocks with unacceptable degrees of manufacturing defect e.g. under firing
 - Blocks with substantial areas of poorly executed previous mortar repairs
 - Drummy sill blocks, Glaze failure over and above an acceptable level as determined by specialist consultants.

The extent of glaze failure due to weathering will be reviewed and the final % of the face area of the block to be repaired will be based on the findings, to minimise unnecessary block replacement.

Glaze repairs will be undertaken to the area of the glaze loss only.

Glaze repairs are to be undertaken using colour matched breathable surface colour.
- **Repair:**
 - Glaze failure
See discussion above.
 - Individual blocks with stable, simple cracking.

3.0 SCAFFOLD ACCESS

The Carrington Street, Margaret Street and Wynyard Lane elevations will be enclosed full height by scaffold. The scaffold will be erected in a staged manner to enable the installation of the facade retention system and access the facade. Façade inspections will be undertaken progressively with the installation of scaffold and retention system at such time that safe access can be provided.

The scaffold will enable assessment of conditions on a block by block basis. A comprehensive range of visual, non-destructive, and destructive testing (such as hammer taps) will be undertaken.

There will also be time for the specialist contractor, to measure the blocks to be replaced so these can be shop drawn and manufactured.

4.0 TESTING/DESTRUCTIVE INVESTIGATION

The scaffold will be used to undertake localised subsurface investigations which will enable:

- A comprehensive understanding the construction and composition of the façade materials.
- Understanding of the underlying causes of the faience block failures as caused by block detailing, fixings and supports.
- Identification of actual and potential problems with the support structure of the terracotta facades e.g. concrete, reinforced concrete, embedded steel columns and beams.

4.1 PRIORITIES

The areas selected for opening-up will focus on:

PRIORITY 1:

Information required to further develop and verify the design and installation of the facade retention system and also the permanent design of Shell House façade support structure.

The areas of opening-up will be determined by the consultant group, specifically Taylor Thomson Whitting as the temporary works structural engineers and in conjunction with Adriel Consultancy and Robert Bird Group, the base building structural engineers.

PRIORITY 2:

Locations of clusters of defects suggesting issues with the building structure or with faience block supports or fixings e.g. fractures, spalls, and horizontal runs of cracks.

The areas of opening-up in Priority 2 will be determined following the detailed inspection of the façade and developed by Arup Facades and Robert Bird Group in conjunction with Adriel Consultancy and the specialist façade restoration contractor.

Required Hazmat remediation will occur prior to Priority 1 and Priority 2 works should HAZMAT material be identified.

For each scenario, early advice will be provided to the City of Sydney regarding:

- The locations of areas of opening-up
- The justification for the areas selected
- The methodology for the destructive works
- The procedures for recording the process

4.2 THE SUBSTRUCTURE UNCOVERED

Assessments of the existing fixings and conditions of the brickwork/blockwork, concrete, steel reinforcing and steel beams/columns will be undertaken by the relevant specialist engineers.

Any necessary testing will be undertaken by a Materials Consultant.

Testing for salts:

Qualitative and quantitative analysis of select samples of faience substrates will be undertaken to understand the types and quantities of salts present.

Findings of the opening-up will be presented in an Illustrated site inspection report. This will include the repair strategy for each location. The structural repair works will be specified in detail by the Structural Engineer.

The findings of the detailed inspections and the opening works will inform the Maintenance Plan for the conserved facades, with certain features requiring ongoing monitoring.

5.0 MATERIAL SELECTION PROCESS

It is proposed that the following samples and information be obtained for review and selection by the specialist consultant group and client group. Samples will also be supplied to the Manager, Heritage and Urban Design, City of Sydney prior to the placement of the full order for replacement blocks. :

- Samples of replacement glaze prepared by the faience manufacturer. This sample will be colour matched to the existing façade and establish the acceptable range for all future remediation works.

- Samples of replacement pointing mortar prepared by the specialist contractor. The mortar colour and texture will be matched to the original mortar.
- The following supporting information will also be provided:
 - The shop drawings of the replacement blocks as prepared by the manufacturer and approved by the specialist façade contractor.

6.0 PROTOTYPE APPROVAL

A selection of representative block types will be ordered to undertake a prototype area of façade remediation replacement to ensure that remediation works are completed to an acceptable standard. The prototype area will be selected and agreed by the specialist consultants and project group at the earliest opportunity and will be inspected by all parties including the Manager, Heritage and Urban Design, City of Sydney.

They will be installed within a cleaned area of faience.

The area will also include samples of glaze repair and repointing.

The prototype area will be undertaken prior to the commencement of full scale remediation works to ensure that workmanship and detailing is satisfactory and to a high level.

7.0 FACADE ACTION PLAN

The following documents will be prepared to fulfill the requirement of the City of Sydney for a Façade Action Plan:

7.1 SCHEDULE OF CONSERVATION WORKS

This will be prepared following the close-range inspections and opening-up works described in Sections 2.0-4.0.

7.2 DRAWINGS - LOCATION & IDENTIFICATION OF REPAIRS

The facades will be presented at scales of 1:100 and 1:50 for the identification of individual blocks and their selected repairs.

Sections will be prepared of select areas of the facades where work is proposed to the structure behind the blocks.

7.3 ARCHITECTURAL & ENGINEERING SPECIFICATIONS & METHODOLOGIES

Generally:

The specification will require that all the works, including the temporary façade support be undertaken in a manner that minimises demolition, alterations, and new penetrations to the significant fabric of the existing building. Associated fixings will be kept to a minimum.

Base requirements for the specialist façade repair and restoration contractor will include:

- The provision of certain methodologies regarding critical elements of their work.
- Marking up repairs as scheduled on the actual blocks for inspection and review
- Cleaning trials on the faience
- Glaze sampling and matching
- Measuring for shop drawings
- Submission of approved shop drawings
- Reporting on the manufacturing progress
- Materials and workmanship samples described elsewhere

Prototypes:

See 6.0 above.

7.4 WORKS TO THE UNDERLYING STEEL & CONCRETE COMPONENTS & STRUCTURE

This works will be detailed by Arup Facades in conjunction with Robert Bird Group.

It is probable that further investigations will be required as the full extent of defective sounds blocks are removed and the underlying defects are fully exposed. If so, Arup/RBG will provide updated specifications and methodologies.

7.5 REPOINTING

The following will be specified

- Hazmat remediation requirements and specifications for safe removal of hazardous materials
- The extent of replacement
- Methodologies for safe removal of existing mortars and mastics
- The repointing mix and associated preparation, placement, and curing procedures for bedding mortars, pointing mortars and grouts.

7.6 TRACHYTE

- Paint removal
- Repointing
- Indent repair

7.7 EXISTING STEEL WINDOWS

All existing steel windows will be surveyed, a schedule of repairs and associated specifications prepared. Any new steel windows required will be shop drawn and fabricated to exactly match the existing in appearance. To be undertaken by Adriel Consultancy in association with Arup Facades. Shop drawings by the specialist window restoration sub-contractor.

7.8 RENDER FACADE TO WYNYARD LANE

Appropriate inspections and testing, scheduling of repairs plus an associated specification will be prepared by Adriel Consultancy.

7.9 QUALITY OF WORKS UNDERTAKEN

The proposed works to the facades are to be undertaken by appropriately experienced and/or qualified tradespersons who are skilled in traditional building and engineering trades, all in accordance with the Façade Action Plan.

The approval of samples of materials and workmanship for various aspects of repairs and replacement work will be an important part of the works regime.

Further to the approval of materials and workmanship samples listed above, the implemented works would be offered in stages to the Manager, Heritage and Urban design, City of Sydney.

8.0 FACADE MAINTENANCE STRATEGY

A Facade Maintenance Strategy will be prepared on completion of the works for the ongoing maintenance of the glazed architectural facades

It will include the requirement for annual facade inspection reports.

9.0 CONSULTANT LIST

Please refer to the below table which outlines specialist consultant and contractor groups to be retained and/or engaged for the completion of the Shell House works:

Consultant/Contractor	Project Role	Team Leader
GML	Heritage Architect	Peter Romey
Arup Facades	Heritage Façade Specialist	Felipe Flores
Adriel Consultancy	Faience Materials Specialist	Nicola Ashurst
Douglas Partners	Geotechnical Engineer	Charles Marais
Robert Bird Group	Permanent Structural Engineer	Scott Wheeler
Taylor Thomson Whitting	Temporary Structural Engineer	Kevin Barry
Delta Group	Demolition Contractor	Jason Simcocks

Nicola Ashurst.

NICOLA ASHURST



Adriel Consultancy

**SHELL HOUSE- STRATEGY DOCUMENT FOR THE HERITAGE FAÇADE CONSERVATION
ADRIEL CONSULTANCY PTY LTD**

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20 February 2017

File No: D/2014/17/F
Our Ref: 2017/085195

Brookfield
Level 22, 135 King Street
Sydney NSW 2000

Attention: Mike Russell

Dear Mike,

SSD 5824 - MOD 3 – Shell House, Carrington Street, Sydney

Following your email dated 6 February 2017, the City has reviewed the response prepared by JBA and dated 6 February 2017 and the initial Strategy Document for Shell House prepared by Adriel Consultancy which includes the proposed changes to the wording of the condition of consent.

Accordingly please be advised that the City is supportive of both the changes to the wording of the condition proposed and the Strategy Document prepared by Adriel Consultancy.

If you wish to discuss this matter further, please contact Bridget McNamara, Senior Planner, on 9246 7616 or bmcnamara@cityofsydney.nsw.gov.au.

Yours sincerely,



CHRISTOPHER CORRADI
Area Planning Manager (Major Projects)