Trades Union Congress

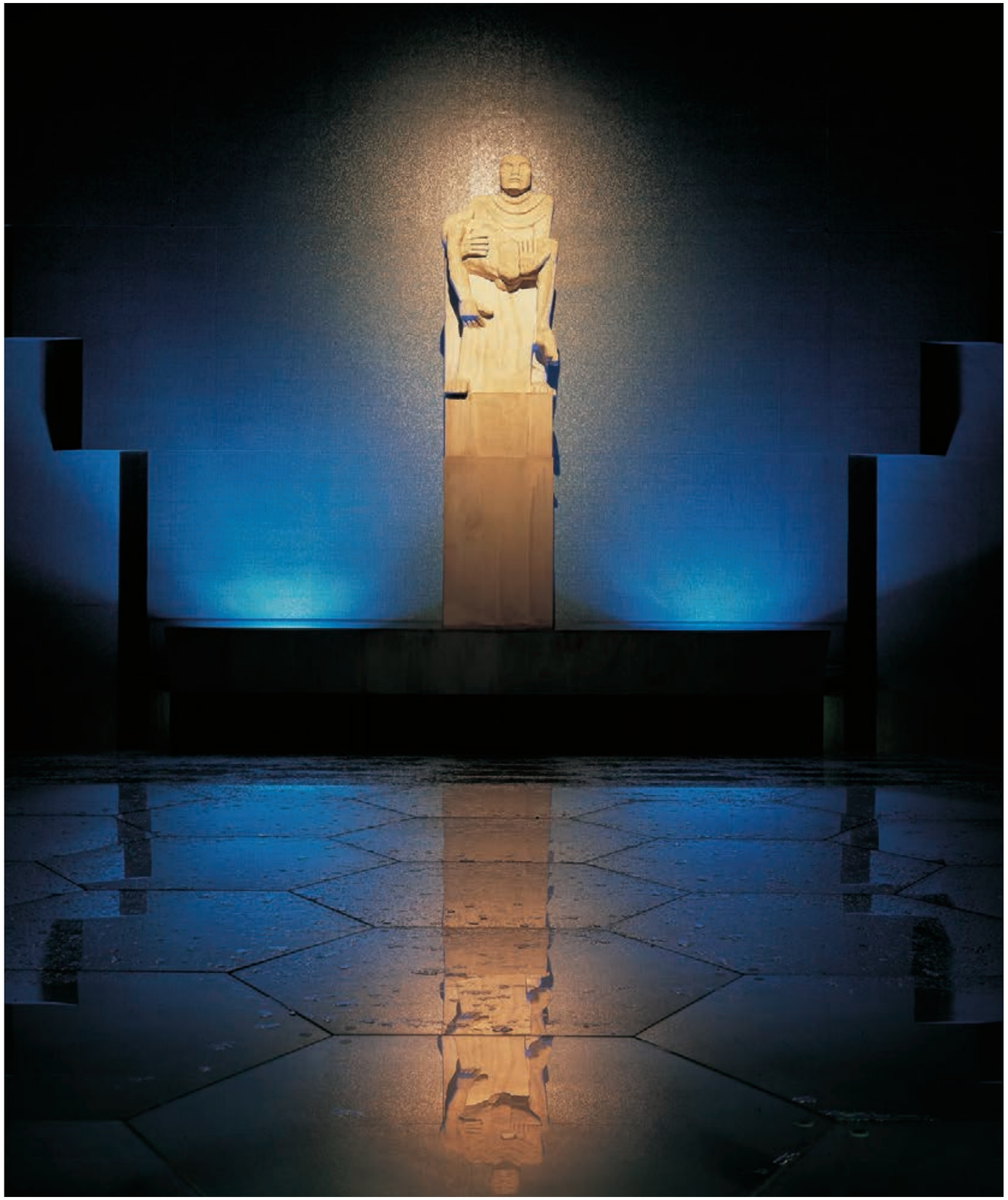
Congress House
Courtyard and Balcony Works

Design and Access Statement incorporating Heritage Impact Assessment and Sustainability Statemenet

Hugh Broughton Architects

Supported by
Price & Myers

December 2014



This page: Conference Hall, refurbished in 2001 (HBA with IFA)
Cover: Memorial Wall and The Group (Sir Jacob Epstein, 1957) with glass over cladding to conference hall roof in foreground

Contents

Hugh Broughton Architects
A 41a Beavor Lane, London W6 9BL
T 020 8735 9959
E hugh@hbarchitects.co.uk
W www.hbarchitects.co.uk

1.0 Introduction

This design and access statement, incorporating a sustainability statement and heritage impact assessment, supports both Listed Building and Planning applications to the London Borough of Camden.

The submission has been prepared for the Trades Union Congress by Hugh Broughton Architects to investigate measures to prevent leaks into the Conference Hall at Congress House, a Grade 2* listed building. The report also reviews works to the balconies on the Dyott Street elevation following a recent incident when glass fell to street level.

The original roof over the Conference Hall had been leaking since shortly after its construction in 1957 and was therefore over-clad in glass in 1996. The over-cladding has now reached the end of its useful life and needs to be replaced to maintain the integrity of the roof over the Conference Hall.

This report explains the construction of the original roof and the reasons it leaked. It also explains why the glass over cladding now needs to be replaced. The report describes the pre-application process which has been carried out; it explains the reasons why the proposals are required and the options which have been considered; it describes the design for a high level umbrella canopy over the courtyard, which can maintain natural ventilation and light levels whilst keeping the original roof dry; it provides a review of areas in the building which are affected by the proposals and incorporates both a sustainability statement and the heritage impact assessment. The report also includes information to allow an assessment of the proposals to restore the Dyott Street balconies, following the failure of a first floor glazed panel in September 2014.

1.1 Background and History

The design of Congress House was the subject of an open design competition, which was won by David du R Aberdeen in 1947. The TUC had acquired the site in 1946. Aberdeen's proposal ingeniously solved the complicated problems presented by the restricted and awkwardly shaped site and created a worthy memorial to Trades Union members who had died during the World Wars. Aberdeen stated that his objectives for the building were:

- Efficient circulation
- 'An openness and spaciousness in three dimensions'
- Ample provision of natural light and fresh air
- 'To create a building of elegant simplicity, logical and beautiful in expression'

Construction of the building commenced in 1953 and the building was formally opened in 1958. Over 50 years following its completion the building still serves as the headquarters of the TUC. Congress House was Grade 2* listed in 1988 and is considered one of the most significant and architecturally distinguished 1950s buildings in Britain.

The original roof over the conference hall is made of lead lined timber kerbs and gutters and 172 flat glass hexagonal coffered rooflights, all supported on a steel space frame. It allows natural light into the lower ground level conference hall and is one of the key features of the building's architecture. At night candelabra lights within the space frame shine up through the hexagonal coffers giving the courtyard floor a soft luminosity.

The small balconies to the east elevation cantilever from syndicate rooms facing onto Dyott Street. They have metal balustrades to the sides and were glazed to the front, increasing their transparency when seen from the street. The careful consideration of materials in the design of the balconies is characteristic of Aberdeen's fastidious approach to the design of all of Congress House.

1.2 Consultation Process

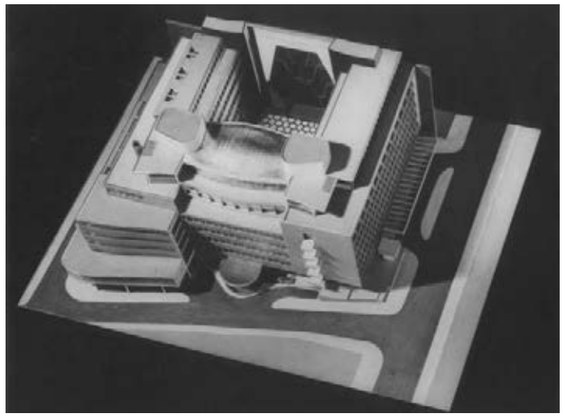
The proposals have been developed in consultation with English Heritage and London Borough of Camden's Conservation Officer following a pre-application submission (Ref. 2014/6764/PRE). As part of this process we have enjoyed a meeting on site with Antonia Powell, the Conservation Officer (12 November 2014) and an exchange of emails with both the Conservation Officer (3 December 2014) and English Heritage Inspector (26 November 2014). Concluding this process Antonia Powell wrote:

"In principal these proposals are likely to have our support subject to the additional information suggested and I recommend that you submit an application in due course."

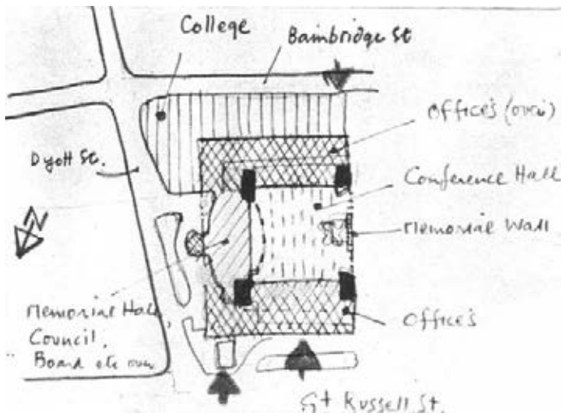
The proposals incorporate the additional information referred to in this statement, namely:

- Justification for the use of ETFE as a roof covering
- Information about the material, support frame and the method of fixing to the listed structure
- Information on the enhancements possible as a consequence of installing the high level canopy
- Inclusion of a sustainability statement

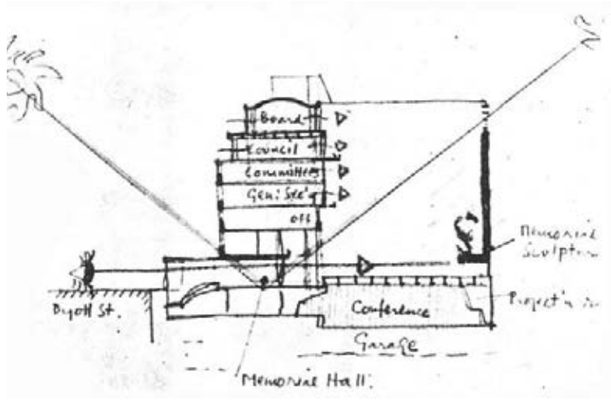
Aberdeen's competition model



Aberdeen's competition model aerial view



Aberdeen's concept plan



Aberdeen's concept section demonstrates a concern to bring natural light into the building

2.0 Courtyard

2.1. Reason for Proposals

2.1.1 The Original Roof Leaked

The original hexagonal coffered roof began to leak shortly after it was constructed. By 1994 it was regularly leaking in at least six places. Dye tests carried out on the roof showed that the ingress path for the water was very long making it impossible to determine exactly where the leak was occurring. At the time some double glazed panels were opened up and these were found to be dry inside. This meant that the leaks had to be occurring through the lead lined gutters. Standing water was often evident in the gutters reinforcing this assumption.

Whilst lead is a commonly used roofing material with a design life in excess of 80 years, it must be carefully laid on flat rooves with falls of at least 1 in 40, maximum sheet lengths of 2.4m and drops (or 'drips') of at least 50mm at laps between sheets. The combination of falls and drips combines to suggest an overall fall across the conference hall roof should be approximately 1 in 20. The actual fall across the roof is around 1 in 140. This explains why water was standing in gutters and why it was also penetrating the roof at junctions between sheets and leaking into the conference hall

2.1.2 The Glass Over-Cladding Failed

Following a review of options, in 1996 a low level single glazed roof was added above the failing hexagonal roof. Nearly 20 years after its installation this over cladding is now failing.

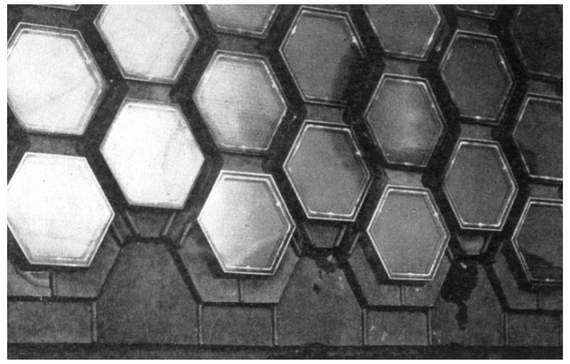
The over-glazing was designed with hexagonal panels supported with stainless steel stanchions under corners. In multiple locations vertical stanchions were omitted and in these areas the glass panels have tended to sag and the silicone filled joints between panels have broken and begun to leak. A few years ago, a repair of the damaged joints was attempted in one corner. As the gap between panels had become significant, the repair required large areas of mastic to cover the joints. This was extremely unsightly. On other occasions that the system has leaked, the TUC Estates team have had to cover effected areas with a tarpaulin until the joints can be repaired.

As the problem has developed, some gaps have enlarged to such an extent that repairs would be very unsightly, requiring excessive amounts of mastic to fill gaps. Looking across the roof now it is clear to see that many of the panels have dropped out of level. As the over-glazing is directly on level with people in the Marble Hall, the problem is compounded by the dust, which accumulates on the roof making it difficult to see the original roof.

A review organised by the Estates team with a glazing specialist (Glazing Refurbishment Ltd) recorded the following observations:

- It was not possible to install vertical stanchions under every panel corner as the feet of the stanchions coincided with steps in the gutters. For the same reason, it remains impossible to install the required additional stanchions.
- The roof is made from toughened and laminated glass which cannot be drilled post production to receive the necessary fixings to connect the glass to additional vertical stanchions. If vertical stanchions were added the related glass panels would need to be made anew with pre-drilled holes to receive the fixings.
- As part of the installation it was necessary to adjust the height of the stanchions as the glass was installed. This process would be necessary if additional stanchions were added. This would require the removal of all the glass and its reinstatement to ensure the refurbished glazing was level. This would be an extensive and costly process with risk that the problem was not solved.

As not all the additional vertical supports can be installed, the problem of movement of the glass panels cannot be solved and an alternative means to protect the original roof is needed.

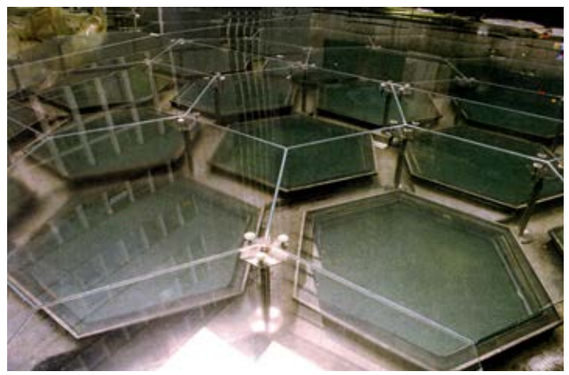


View of the rooflights showing the lead lined gutters between the glazed hexagonal coffers (1958)

Detail view of rooflight kerbs (1957)

Glass over-cladding to the original conference hall roof. Black metal mesh to Council Chamber also visible

Detail view. Note missing stanchions to some corners of overcladding



The glass over-cladding and support system (1996)

2.2 Option Appraisal and Proposals

2.2.1 Introduction

As Congress House is Grade 2* listed and the roof over the conference hall is one of the building's key architectural features (as identified in the Conservation Management Guidelines, April 2004), it would not be possible to remove the original roof and replace it with another design. The options for creating a dry environment are therefore:

- Option one: remove the glass over-cladding and refurbish the existing roof
- Option two: remove the glass over-cladding and install a high level transparent ETFE canopy

2.2.2 Option One - Refurbish the original roof

The original roof has insufficient falls to the gutters, which has led to leaks in the past. To overcome this it will be necessary to remove the glass over-cladding, strip off all the lead and carefully remove the glass hexagons. This would need to be carried out under a temporary high level scaffold roof to ensure no water ingress to the conference hall.

The timber gutters and rooflight kerbs would need to be re-constructed to falls to create an overall 1 in 20 fall across the roof. Additional insulation could be added at this point to improve the thermal performance of the roof and kerbs. The gutters could then be relined in lead or high performance membrane, all laid to falls. On completion it would be necessary to redecorate the conference hall in its entirety.

The impact of providing the correct falls to the lead lined gutters will be to raise the central hexagons 750mm higher than the edge ones. As a result, the overall flat appearance of the roof as finished in 1957 and when seen from the Marble Hall will be lost. Externally the roof will appear like a patchwork of hexagons of different heights creating a 'Giants Causeway' effect. The internal appearance will be effected by the varied depth of the hexagonal coffers. Architecturally and historically, this solution is considered to be highly unsatisfactory.

Structure

Whilst there would be some additional load from the increased gutter falls, this would be offset by the removal of the existing glass screen so there should be no implications for the existing structure.

Environment and building services

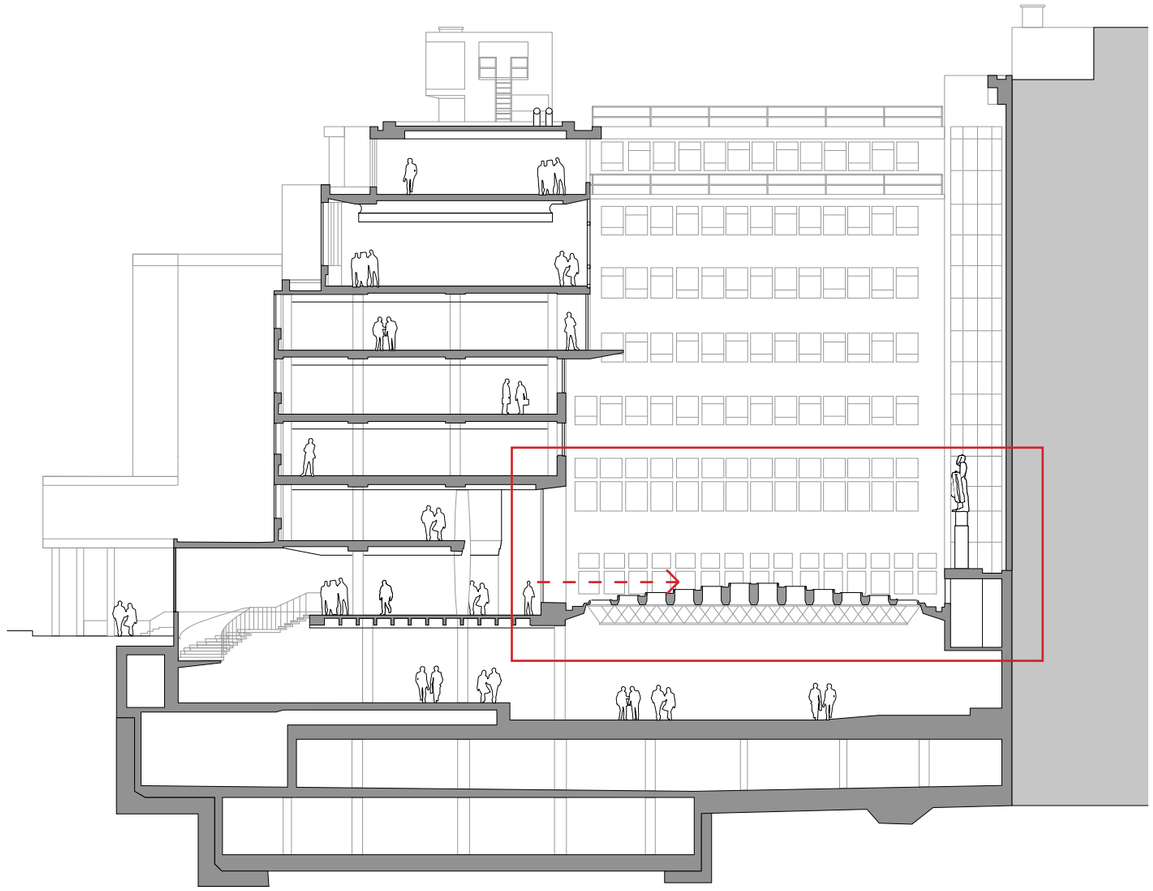
There will be no significant changes to the existing environmental status of the courtyard. Ventilation of the offices and the arrangement for smoke removal in the event of fire, will remain as the existing. Solar gains on the upper floor offices are currently controlled by manual operated blinds within the individual office space and this would remain. Solar gain to the Council Chamber was significant and so, in 1988, a black metal mesh was introduced to the east and west facing glazing to reduce heat gain and this would also remain. Rainwater run-off from the refurbished roof would be directed to the edge gutters and discharged into the existing rainwater down pipes. Additional lighting could be installed to light the Epstein sculpture.

Programme

This option would be highly disruptive. A temporary roof would be needed to protect the conference hall whilst work was ongoing. There would be significant disruption to ground floor offices and the Marble Hall. In addition to the works to the roof the conference hall itself will require significant refurbishment to return it to its current state. This option could mean that the conference hall would be out of action for a prolonged period, probably in excess of six months with consequential loss of income.

Recommendation

This option is expensive, highly disruptive and very unsatisfactory in terms of hertitage protection and should not be progressed further.



Proposed Section - Option 1 showing the impact of laying gutters to falls (highlighted)

View to show how the reconstructed hexagons would destroy Aberdeen's simple design intent creating a 'Giants Causeway' effect.

2.2.3 Option Two – high level ETFE canopy

A high level lightweight steel structure would be installed spanning 30 metres from north to south across the courtyard. This would support inflated transparent ETFE cushions. This is the preferred solution to the protection of the courtyard and is the proposal shown in this application.

Properties of ETFE

ETFE is commonly used for covering atria. The best known ETFE installation in the UK is the Eden Project in Cornwall although there are numerous other installations nationwide. Examples of ETFE canopies are illustrated on page 6. The roof over the courtyard at Devonshire Square, London EC2M 4WQ is the most similar to the proposal for Congress House. This courtyard is close to Liverpool Street, is open to the public and the ETFE roof can be easily viewed.

ETFE canopies consist of pneumatic cushions supported in an aluminium perimeter extrusion, which is supported on the steel frame. The cushions are inflated giving them structural stability and high levels of insulation. The inflation unit that would be needed for a roof at Congress House would be 800mm x 300m x 600mm high and would be located next to the existing chillers on the north side roof.

Key features of ETFE are:

- It is unaffected by UV light, atmospheric pollution and other forms of environmental weathering.
- The material has been in existence for over 40 years with no known cases of ageing, discolouration or embrittlement. ETFE roofs have been commonly installed in the UK since the 1990s. The earliest examples show no discolouration. An early example can be seen at Lacon House, 84 Theobalds Road, London WC1X 8RW. This roof was installed in 1996 and the photos included on page 6, taken recently, show the excellent condition of the material.
- The roof would be covered by a 25-year warranty.
- It is very transparent which will help to maintain light levels in the offices below
- It is lightweight, requiring minimal structure for support
- It is easily maintained as it is an extruded material with an extremely smooth surface and very low friction co-efficient. This means that it is kept clean by rainwater run off. Internally the roof would need to be cleaned on a 3-5 years cycle.
- If any panel needs to be replaced this is easily done without need for internal access. If any cushion suffers minor damage this can be repaired using ETFE tape. The roof is fully accessible to specialist operatives using abseiling equipment.
- If the inflation unit loses power, the roof will maintain pressure for 4-8 hours. No damage will occur to a deflated unit although it should be monitored until it can be re-inflated.
- When it rains very hard on enclosed ETFE canopies it causes drumming noise. At Congress House the sides of the canopy would be open with a gap of at least 3m. This would dissipate the sound. In London this type of rain occurs for approximately 8-10 hours a year.

Design

The design of the ETFE canopy has been developed in collaboration with Price and Myers structural engineers and Vectorfoiltec, UK-based specialists in the installation of these structures.

The design comprises a gently curving canopy of six 3.4 metre bays, spanning from north to south. The curve helps to shed water to existing roofs on the north and south sides. This simple design minimises the extent of steel and accommodates the largest possible ETFE cushions. The size of steel members is reduced with the addition of trussed rods, similar to the installation at Devonshire Square.

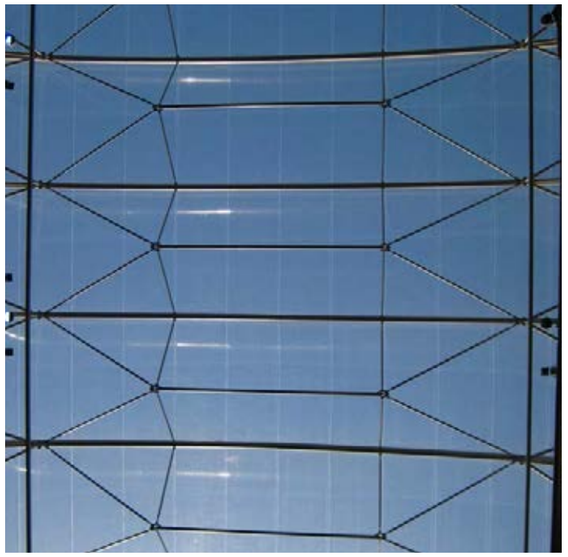
The ETFE cushions would be supported on seven gently curved lightweight steel trusses spanning from north to south. At the ends the trusses would be supported on steel columns. The columns will be fixed to upstands located above the principal column and

The glass over-cladding is removed and the courtyard is protected by a gently curving ETFE roof with minimal lightweight steel structure. The view of the original roof from the Marble Hall is restored. Note also the removal of black metal mesh from Council Chamber glazing.

ETFE Precedent Projects

Night time exterior of Devonshire Square, London

Day time exterior of Devonshire Square, London



Looking up at the ETFE and steel at Devonshire Square

Interior of Devonshire Square, London

Lacon House, London. This roof was installed in 1996 and still looks clean

Lacon House ETFE Canopy recent photo

Exterior of the Eden Project, Cornwall

Interior of Mediterranean Biome at the Eden Project

beam line of the sixth floor with a special weathered fixing detail (refer to drawings P-1210 and P-1211). Struts raking back from the columns on the south side will provide lateral restraint under wind load.

Five of the trusses comprise 219mm diameter tubular steel top booms with 40mm diameter tension rods spaced off the top boom with 60mm diameter struts. The rods are fixed to the struts with high quality buckles. This combination creates a very lightweight design which minimises the size of structural components and thus the impact on the courtyard.

The top of the Memorial Wall is one storey higher than the south, east and north sides. The height of the roof is therefore designed to reveal the full height of the Memorial Wall. The additional storey height around the south, east and north sides would be left open to maintain natural ventilation to the rooms facing into the courtyard. This would also allow for smoke evacuation in case of a fire so no additional smoke vents will be needed. On the north and south sides the canopy will oversail sixth floor balconies. As the canopy sails over these balconies any wind blown rain is unlikely to reach the courtyard. If it does it will have insufficient penetration to affect the original roof.

On the west and east sides the end trusses incorporate a screen of metal tubes, which will reduce the impact of the wind without visual impact on the courtyard. The wind breaks also help to break up rain particles and so reduce risk of moisture falling on the restored hexagonal roof at ground level. The end trusses include 219mm bottom booms to frame the wind breaks. There is no support provided to the west truss by the Memorial Wall. These end trusses also span onto columns like the five intermediary trusses.

A 600mm wide walkway is shown on the north and south sides of the canopy cantilevered off the steel on tapering brackets. This walkway allows safe access for cleaning the ETFE roof by specialist operators using a mansafe and abseil system.

The gently curving ETFE canopy will:

- Provide the most discrete solution to protecting the original fabric
- Maintain light levels, natural ventilation and transparency with minimal impact on existing fabric and views.
- Be invisible from the street.
- Offer additional opportunities to restore original historic fabric

2. 3 Additional opportunities

The installation of the ETFE canopy presents additional opportunities:

- The canopy will be treated with a microdot pattern, which will reduce solar gain whilst maintaining light levels and transparency. This will allow removal of the unsightly black mesh to the Council Chamber west elevation, reinstating a degree of transparency to this room, as per David Aberdeen's original design.
- As the north and south balconies will be covered by the new canopy they will become more usable. These will be refurbished with enhanced paving, lighting and new glass balustrades and provide a pleasant outdoor covered space for amenity use by sixth floor offices.
- Removal of the secondary glazing over the Conference Hall roof allows restoration of the view across the original hexagonal glazed coffers.
- The canopy will offer protection to The Group, the sculpture by Sir Jacob Epstein. The sculpture will be cleaned and re-lit as part of the works
- The courtyard elevations will be cleaned and any redundant items (eg cables, planters etc) will be removed helping to return the space to its original form.

Proposed view across the courtyard from the refurbished 6th floor balconies. The louvred screen helps to break up wind driven rain. Note also removal of black metal mesh from Council Chamber glazing (bottom left)

2.4 Sustainability Statement

The proposal will provide an umbrella canopy over the courtyard to protect the original hexagonal roof, which has leaked since its construction in 1958. Key sustainable attributes of the project are:

- The primary function of the new canopy is to prevent rain from entering the courtyard area.
- Existing historic building fabric will be better preserved by shielding the building from the rain
- There will be no change to the disposal of rainwater from the site
- The canopy will be treated with a micro-dot pattern to reduce heat gain whilst maintaining acceptable levels of natural light into areas facing the courtyard
- The canopy will reduce solar gain to the Council Chamber, allowing the removal of unsightly black metal mesh screens, which were added to the west facing façade in 1988
- The electrically operated internal blinds in the Council Chamber will be retained to reduce solar glare
- Natural ventilation of office areas, stair cores and toilets facing the courtyard will be preserved as the canopy is elevated 3.15 metres above sixth floor roof height on the east, south and north sides allowing free passage of fresh air.
- The west side of the courtyard forms a party wall to the neighbouring Jury's Hotel

Additionally the use of ETFE contributes to the sustainable character of the design:

- ETFE's efficiency and lightness allow the creation of cladding envelopes that use less than 1% of the embodied energy of comparable technologies, for a better environmental performance.
- The raw materials of ETFE are permitted under the Montreal Protocol and are not petrochemical derivatives. The production method incorporates an enclosed water based process and does not involve the use of any solvents.
- ETFE is recyclable and many components are fabricated from recycled material.
- ETFE is unaffected by atmospheric pollution and UV light. The material does not harden, yellow, or deteriorate over time. This makes its use ideal for long life.
- ETFE is a durable, highly energy efficient and environmentally friendly technology due to its low U values, optimized solar control and low embodied energy.

This submission proposes the installation of a gently curving ETFE roof spanning from north to south. The scheme allows reinstatement of the original roof over the conference hall and could also allow refurbishment of sixth floor balconies and removal of the black metal mesh on the west elevation of the Council Chamber, partially restoring its original transparency.

2.5 Structural Statement

2.5.1 Introduction

The building is 10 storeys formed of LSB, SB, B, G, then 1st up to the 6th floor and is constructed around a central atrium / conference space at basement level. The roof over the conference hall consists of hexagonal glass roof-lights supported on a steel space frame. Unfortunately this roof has leaked since it was built. A remedial scheme of a rain-screen of toughened glass panels supported above the original roof on stainless steel pedestals was installed in 1996. It is proposed to form a new lightweight covering to the atrium at roof level and then remove the 1996 rain-screen to expose the original hexagonal roof.

2.5.2 Ground Conditions & Foundations

From the British Geological maps the site appears to be on Lynch Hill Gravels overlying London Clay. The historic boreholes confirm this and it is assumed the gravels extend down to about 6.5m below ground level. The main foundation to the building is a reinforced concrete raft slab bearing on the gravel. The new roof is a lightweight structure which can easily be supported by the original foundation with no strengthening required.

2.5.3 Structure

Existing Super-Structure

The super-structure of the building is a reinforced concrete frame with RC columns and walls supporting RC beams and concrete clay pot ribbed slabs.
The column reinforcement details shown on historic drawings have been checked and the columns appear adequate to support the new roof without any strengthening being required. Intrusive investigations will be required to verify the concrete strength and the reinforcement details during the next stage.

Proposed Structure

New steel trusses are proposed to span 30m across the existing atrium at approximately 3.4m centres, to line through with the atrium elevations below. The trusses will sit on new steel transfer beams supported off either existing up stands or new concrete plinths at roof level, which will ensure the load transfers directly down into the existing concrete columns or concrete walls.

The trusses will be fully welded to the supporting columns, with the columns having pinned base connections to the transfer beams. The trusses will have a raking steel brace to stabilise them in the north-south direction and will be connected to each other with a continuous eaves beam, effectively forming a portal frame, to withstand lateral load in the east-west direction. The end trusses will have rigid struts and bottom cord so to support a rain screen.

2.5.4 Design Criteria

Codes and Standards

To be assessed in accordance with:

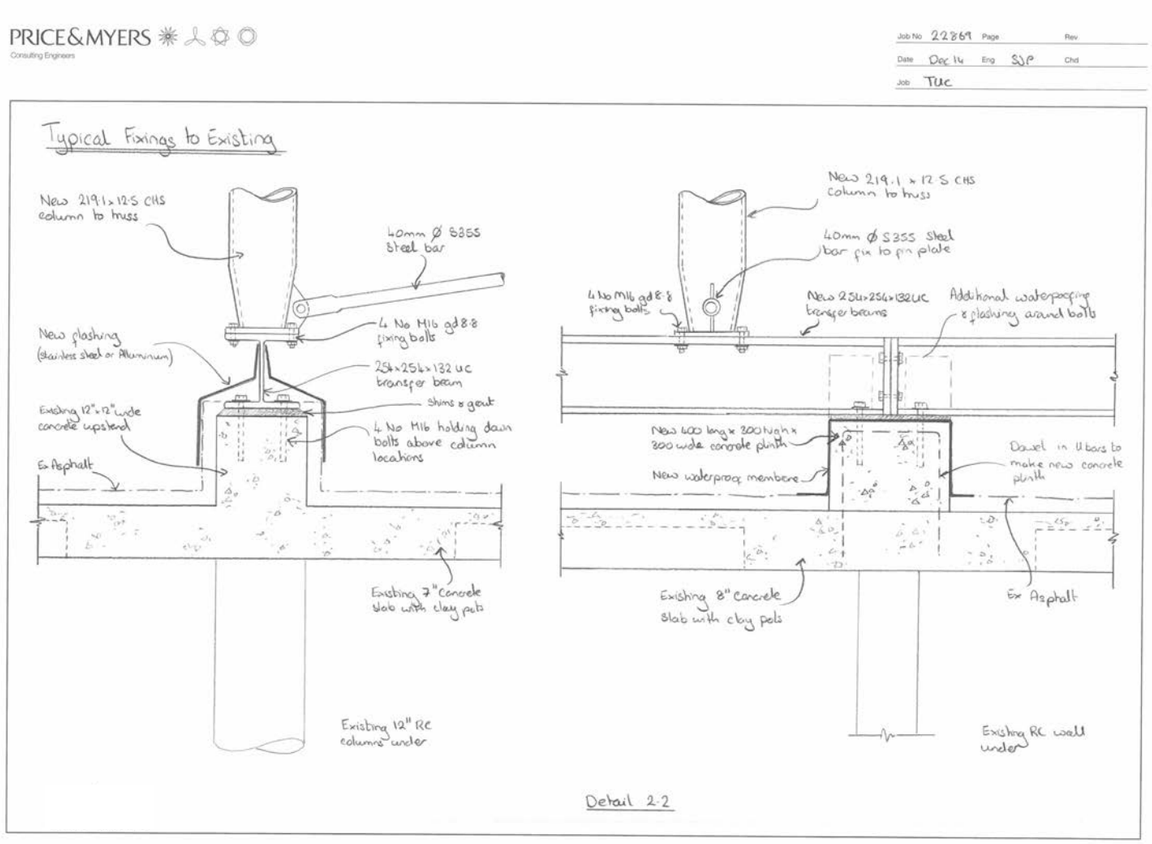
BS6399	Loading
BS950	Steel

Loadings

Dead Loads:	
ETFE	0.7kN/m
Steel Frame	1.9kN/m
Imposed Loads:	
Snow	1.2kN/m
Maintenance	2.2kN/m
Wind Loads:	
Qs	0.81kN/m2
Other Loads:	
Air from ETFE Pillow	4.47kN/m

Disproportionate Collapse

The ETFE frame is a fully tied steel structure which provides effective horizontal & vertical tying and meets the requirements for a Class 2B building.



Proposed canopy connections to original building

2.6 Historical Assessment of areas affected

In 2004, Hugh Broughton Architects and Arup produced Management Guidelines for Congress House. The objectives were to create a working document for ongoing maintenance and to identify areas where works to areas of low architectural and historic significance could be carried out without Listed Building Consent. This document provides a thorough assessment of the special architectural and historic significance of the building, although it was not formally adopted by the London Borough of Camden. The following is an assessment of the areas that will be affected by the proposed courtyard canopy, incorporating documentation that was originally produced for the Management Guidelines.

2.6.1 Setting of building

Concept sketches by the architect show how the building was conceived in response to the restricted and awkwardly shaped site. The external fabric of the building remains unchanged from its original construction, although some repairs to the facing materials have been necessary, especially the mosaic tiling.

The main façade, purposefully set back from the street, is a curtain wall of granite and metal framed glazing, dominated by a giant bronze figure by Benard Meadows. The street facings are two-inch Cornish granite slabs polished to a 'wet sheen'. Regular bands of steel framed windows, with extruded aluminium cills and dividing mullions, follow the same geometry as the granite slabs between them. All columns and other external surfaces on the street side are faced with in situ vitreous mosaic tiles.

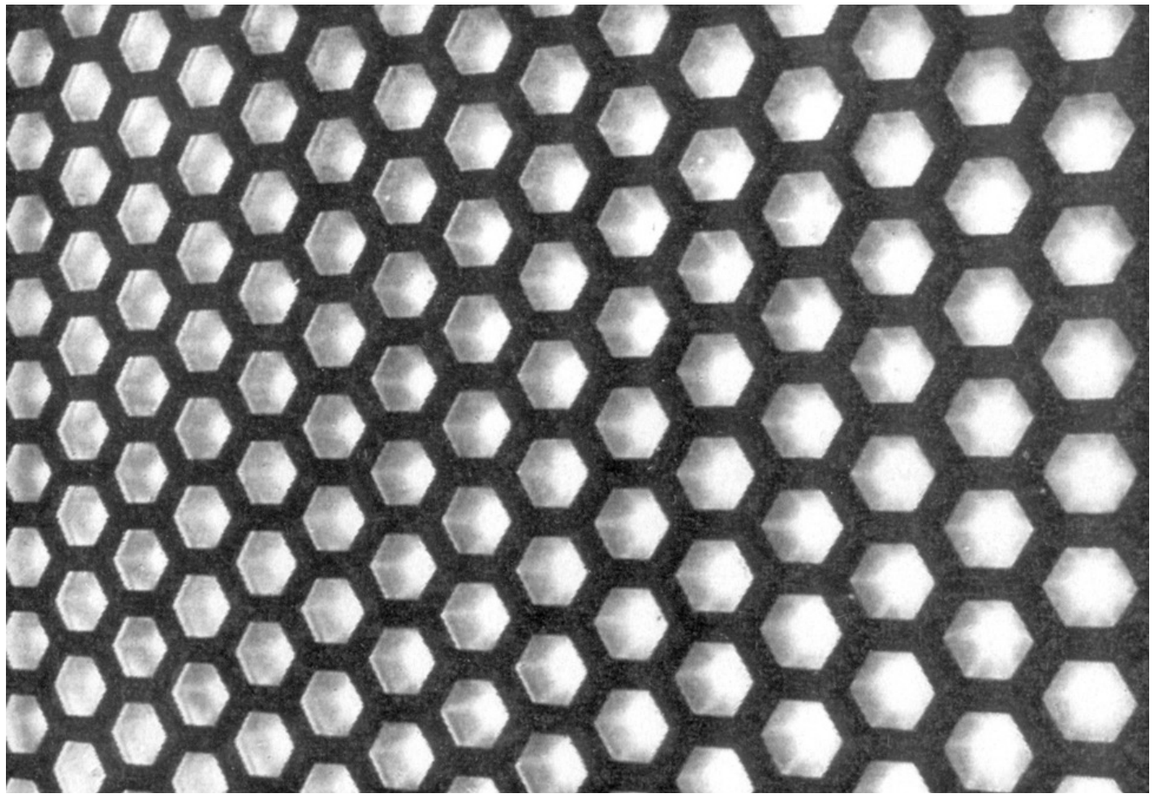
The Dyott Street elevation is a complex composition of contrasting curves and volumes that define the cantilevered horseshoe staircase, the projecting library, and garaging.

In the context of the Management Guidelines, the building elevations are of very high special architectural and historic interest.

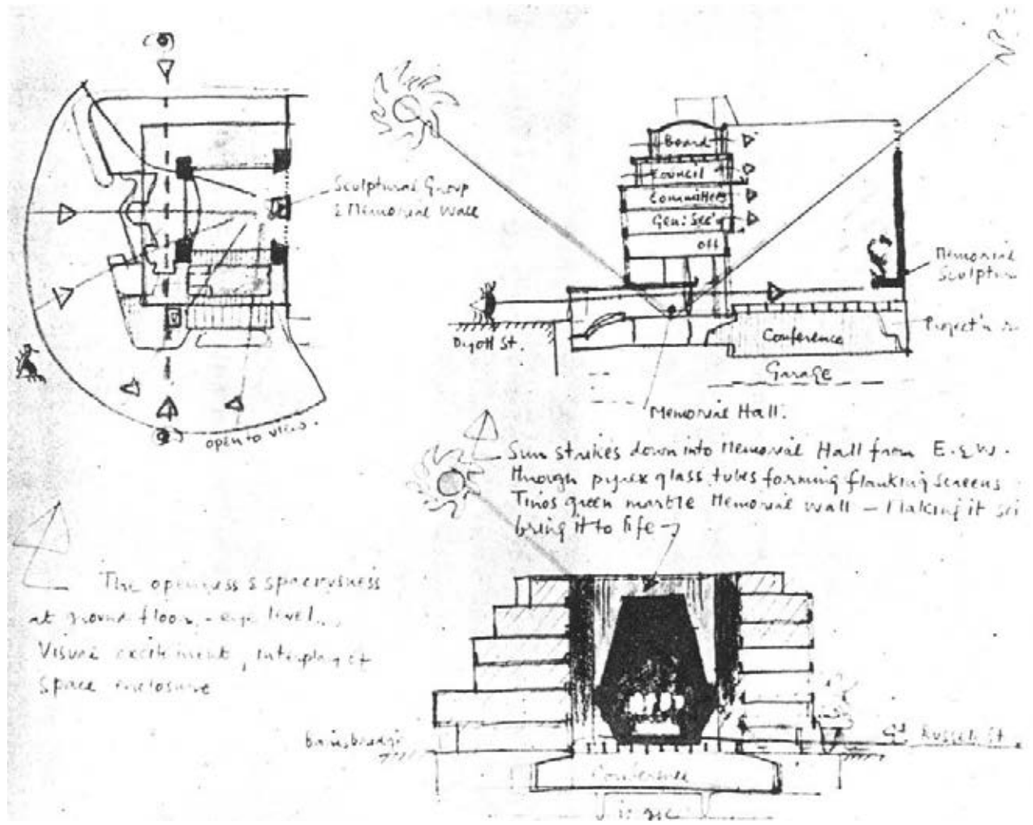
2.6.2 Courtyard elevations

The plan of the building was developed about the three sides of the central courtyard. The fourth (west) side of the courtyard is entirely filled by the Memorial Wall. The wall and the Epstein war-memorial sculpture at its base are either seen or sensed from everywhere within the courtyard. At ground floor level the transparency of the entrances, foyers and Marble Hall reveal the courtyard to the outside viewer and effectively bring him in to the spatial concept of the building. In the courtyard, the facings are 1 3/4 inch pre-cast vitreous mosaic-faced panels solid bedded onto the structural walls.

The courtyard elevations are of very high special architectural and historic interest.



Light spills through the hexagonal glazed coffers at night giving the courtyard a soft luminosity (1958)



Aberdeen's concept sketches (1947) demonstrate the importance of bringing natural light into the heart of the building

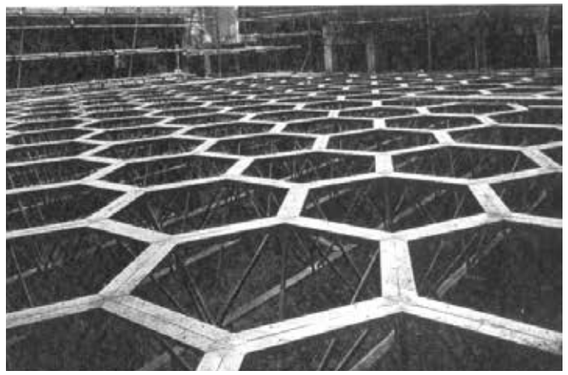
2.6.3 Memorial Wall

The Memorial Wall is the most significant design feature of the building. A deep Genoa green marble base was designed as a 'back cloth' for the sculpture which Epstein carved on site out of a ten-ton block of light Roman Stone. This wall is framed by a screen of Pyrex glass rods which permit diffused light to enter the courtyard from the lightwells of the adjacent YMCA building (now Jurys' Hotel).

In the 1960's, the fixings of the marble panels began to fail. The marble panels were therefore replaced with lighter grey green mosaic tiles to match the other courtyard elevations, using a more robust fixing system.

The plan of the building and many of its key spaces were designed so that occupants could view the Memorial. For instance, the Marble Hall at ground floor level, with huge double height glass panels, has been designed so that the Memorial Wall can be taken in as a whole. This is also possible from the General Secretary's private balcony at fourth floor level while a variety of changing viewpoints are possible from the four general office staircases at the corners of the courtyard.

The Memorial Wall is of very high special architectural and historic interest.



Top left: Conference Hall structural steelwork (1957). Top right: Life Guards at the opening ceremony (1958)
Bottom: Marble Hall (1958)

View from the Marble Hall across the Conference Hall roof (1958). The marble cladding to the Memorial Wall was replaced with mosaic after fixings for the marble failed.

2.6.4 Congress Hall roof

The original hexagonal glass panel floor to the central courtyard formed the roof to the Congress Hall below and provides it with natural light. Structurally, hexagonal frames act together with welded steel ‘space frames’ to span the width of the room, forming an early example of a single span space frame roof structure.

The striking form of the hexagonal roof was an integral part of the original composition, with the hexagonal pattern extending through the marble tiled floor of the Marble Hall on the ground floor, with inlaid brass strips and glass lenses. However, the roof detailing was complex and often leaked.

Finally in 1997, Arup with Ian Ritchie Architects designed the existing glass roof over the Conference Hall. This followed the same hexagonal geometry as the original structure and this can clearly been seen when looking down from the upper floors and roof. Unfortunately when seen from the principle ground and first floor spaces, the hexagonal pattern is not visible.

The original Congress Hall roof is of very high special architectural and historic interest. The glass over cladding is of low architectural and historic significance.

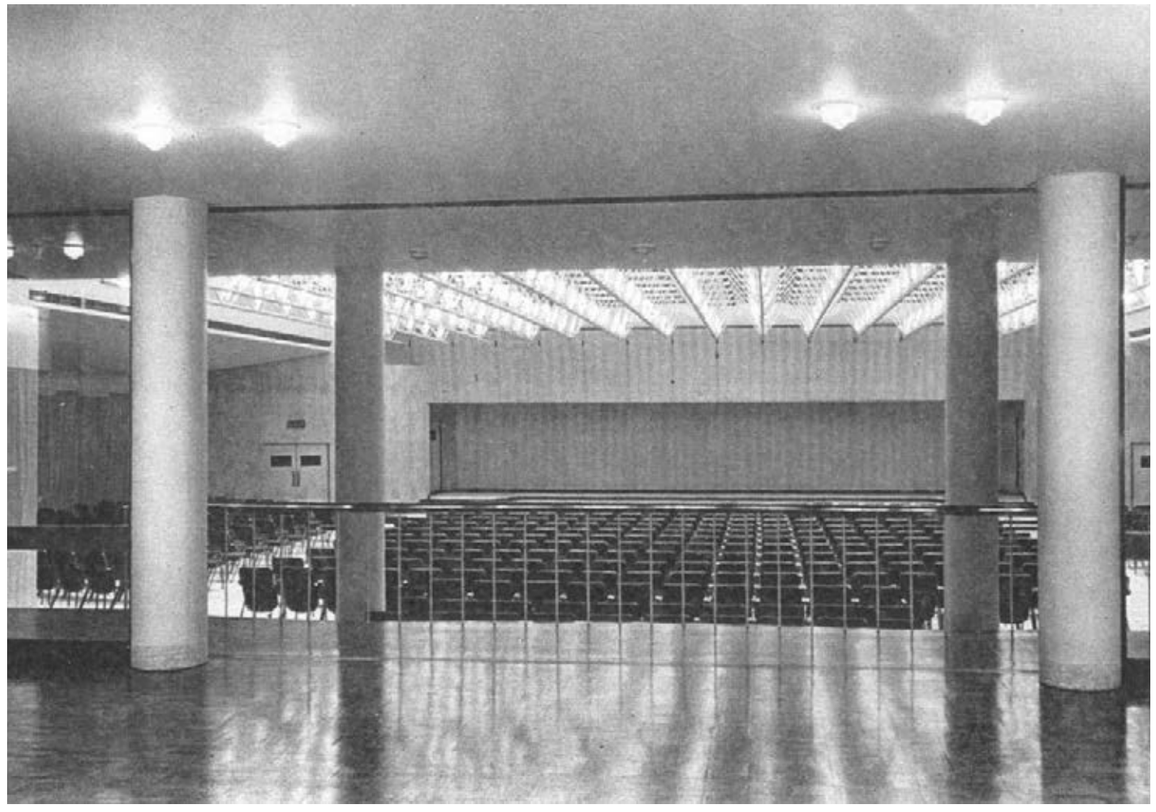
2.6.5 Roof and copper clad plant rooms

The two plant rooms on the roof, which flank the oval shaped roof to the sixth floor offices above the Council Chamber, are expressive and complex in form with curved copper clad sides. These housed the air intake and extract for the original air handling system and the attention to their detailing shows that architect designed the roof to be seen.

In the Conference Hall, Council suite and General Secretary’s suite, refrigeration plant was linked to the ventilation system to provide a degree of comfort cooling. However by the end of the 1990’s, the original plant housed in the basement was too old to have a significant effect on the spaces in summer. Therefore, this was replaced in 2003 with roof mounted chiller units on the north side supported by secondary steel frames. This has significantly improved the comfort cooling of these critical spaces in the summer months.

The roof finishes generally are of low architectural and historic significance. The original features such as plant rooms and stair cores are of high special architectural and historic interest.

Congress Hall from the stage (1958)



Congress Hall from the foyer (1958)

2.7 Heritage Impact Assessment

The options appraisal in section 2.2 explains that the positive impact that the canopy will have on the most architecturally significant elements of the building will far outweigh any negative impact that it will have on the courtyard. The following describes the impact that the canopy will have on the areas of architectural and historic significance described above:

2.7.1 Setting of building

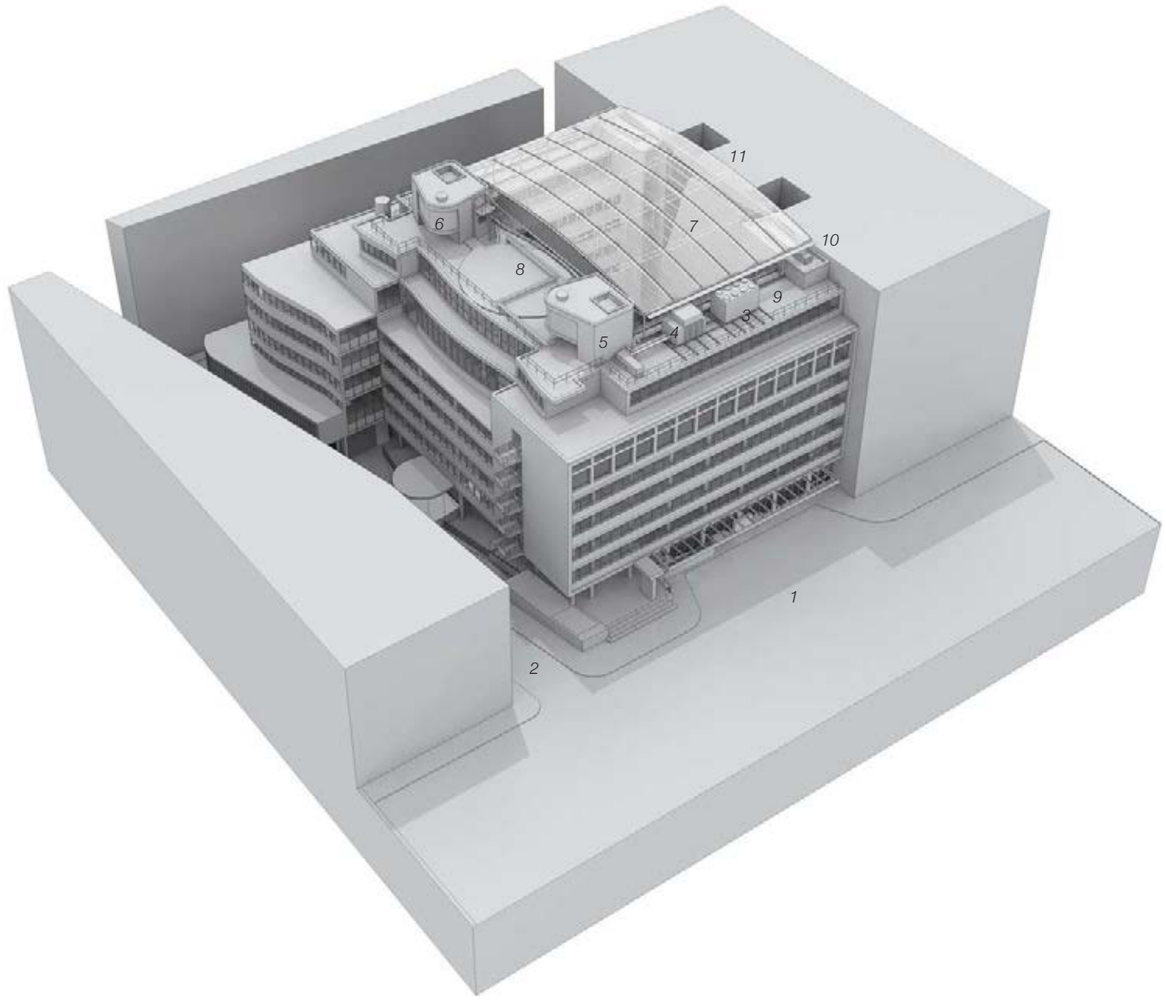
The proposed canopy structure has been carefully designed so that it is set back from the building facades and is not visible from street level. The impact on the setting of the building will therefore be low.

2.7.2 Courtyard elevations

The canopy will have the following positive impact on the courtyard elevations:

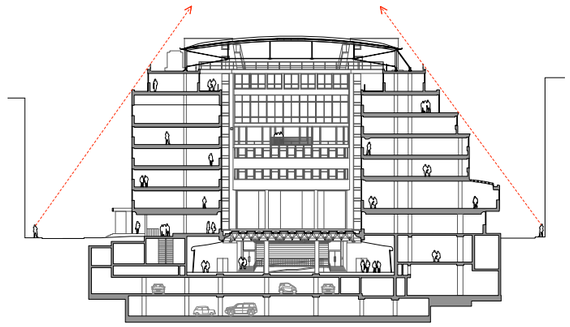
- It will provide an opportunity to remove the black mesh to the west elevation of the Council Chamber.
- The courtyard elevations will be cleaned and any redundant items (eg cables, planters etc) will be removed helping to return the space to its original form.
- The north and south balconies at sixth floor level will be refurbished with enhanced paving, lighting and new glass balustrades to provide a pleasant outdoor covered space for amenity use by sixth floor offices.

The canopy will have some visual impact on views into the courtyard from the ground floor and from the office areas looking into the courtyard. In order to minimise this impact, the proposed structure has been designed to be as transparent, lightweight and as elegant as possible, retaining views of the sky through the clear ETFE panels. Through careful design and attention to detail, the positive impact that the proposed canopy will have on the most architecturally significant elements of the building will outweigh any concern about the visual impact of the structure over the courtyard.



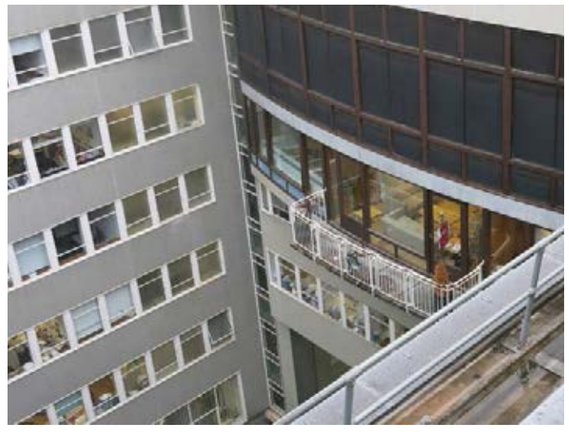
Aerial view showing proposed ETFE canopy:

1 *Great Russell Street*
2 *Dyott Street*
3 *Sixth floor roof*
4 *Existing chiller*
5 *North side plant pavilion*
6 *South side plant pavilion*
7 *Steel and ETFE roof*
8 *Louvred rainscreen*
9 *Open sides allow for natural ventilation of courtyard*
10 *600mm wide fully accessible gutter for maintenance*
11 *Lightwells to YWCA Building*



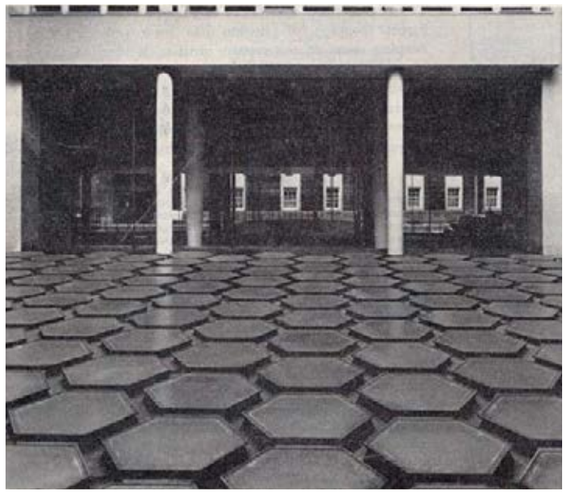
Section showing canopy is not visible from street level

Council Chamber original elevation (1958)



Black mesh to Council chamber glazing (2014)

The new canopy will protect the Memorial Wall and Epstein sculpture from further exposure from the elements



View of the original hexagonal glased coffers to the Congress Hall roof will be reinstated

Removal of the secondary glazing will restore views across the original Conference Hall roof

The copper clad plant rooms at roof level will be left untouched

2.7.3 Memorial Wall

The Group, the sculpture by Sir Jacob Epstein, and the plinth on which it sits currently suffer from exposure to the elements and require regular cleaning. The more it is cleaned, the more it needs to be cleaned. The proposed canopy will offer protection to the sculpture and to the glass rods and mosaic tiles of the Memorial Wall.

As part of the works, the sculpture and plinth will be cleaned and re-lit. The impact of the proposed canopy will therefore be very positive and protection will be a significant improvement to the ongoing conservation of the stonework.

2.7.4 Congress Hall roof

The proposed canopy will allow the removal of the secondary glazing in the courtyard which will have a positive impact on the architectural and historical significance of the Congress Hall roof. The original hexagonal glazed coffers, which have been largely concealed since 1996, will be revealed, restoring the original ground level views across the courtyard towards the Memorial Wall.

2.7.5 Roof and copper clad plant rooms

To minimise the impact of the proposed canopy on the existing building fabric at roof level, the structure has been carefully designed in response to the existing roof level features and to the structural grid of the building below as follows:

- The spacing of the trusses spanning north to south responds to the glazing grid below
- The truss on the east side is set away from the raised copper clad plant rooms by approx. 940mm.
- The truss on the west side of the canopy is aligned with the existing beam at the top of the Memorial Wall although it does not touch it.
- The supporting posts on the north side of the canopy align with an original concrete upstand which currently supports roof level chillers. A new steel beam will be installed on top of this upstand with new flashings to weather the connection.
- The supporting posts and bracing posts on the south side will connect to two new concrete upstands which have been located to align with the structural columns below. The existing ashphalt roof covering will be adapted locally to incorporate the upstands and new steel beams with new flashings to weather the connections.
- No internal strengthening work will be required

3.0 Dyott Street Balconies

3.1 Reason for Proposals

On the Dyott Street elevation there are five balconies, reached from syndicate rooms, which cantilever out from the granite faced façade. The balconies have bronze railed side balustrades and glass panel front balustrades.

At approximately 16.50 on Friday, 19 September 2014 a loud crash was heard by the Building Services Assistant on reception desk duty at Congress House. It was discovered that the glass panel fronting the first floor Dyott Street balcony had fallen out and onto street level. Fortunately no one was hurt.

On investigation it was seen that the fixings for the panel were still intact and fragments of glass were on the balcony and it was therefore likely that the glass had broken in situ. There was nothing on the balcony or street level to indicate that an object had broken the glass and the reason for the breakage is inconclusive.

Contractors attended an emergency response call to inspect the glass on the other four balconies and found them to be in a safe condition. Dyott Street had been closed by the police and on confirmation that there was no further danger it was re-opened at approximately 20.30.

All the glass in the balconies has been removed for fear that other panels may similarly fail. The doors leading from the meeting rooms to the balconies are being fitted with restrictors to allow continued natural ventilation whilst preventing access.

Due to the limited height of the balustrades, their open design and the relative fragility of the bronze side balustrades, access to the balconies has been prevented for the last 15 years – use of the balconies poses a serious health and safety risk.

3.2 Option Appraisal

Following the failure of the first floor balcony glazed balustrade, it was necessary to remove all the glass from the all the Dyott Street balconies for health and safety reasons. To reinstate the protection to the balconies, two options have been considered:

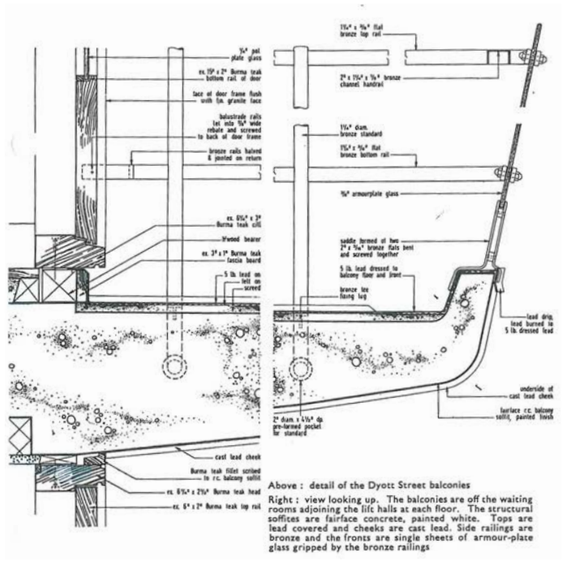
- Option one: a penny bronze finished steel balustrade of uprights, handrail and midrails running around three sides
- Option two: a penny bronze finished steel balustrade of uprights, handrail and midrails running around two sides with a glazed panel to the west side – as close to the original design as possible.

Following consultation with and advice from LB Camden Conservation Officer and English Heritage the proposals shown in this application are for the reinstatement of the glazed panel to the west elevation of the balconies.

3.3 Proposals

The glass in the balconies was inclined out over the street. It was Aberdeen's intention that the glass should assist transparency. To ensure the long term safety of the public the existing balustrades would be replaced with penny bronze finished steel balustrades. The balustrade design would be similar to the existing, within material performance and building regulation limitations. The metal balustrades would run around the north and south sides of the balcony. The glass panels would be reinstated on the east side within a penny bronze finished frame. This allows use of low reflectivity laminated glass. This aids transparency and improves safety, because laminated glass will not fall to ground if broken, as the PVB interlayer bonds fragments of glass together, keeping the panel within the frame. This is why laminated glass is always used in rooflights.

Recent view showing 1st floor balcony with missing glass panel. Subsequently the remaining glass was removed for safety



Above : detail of the Dyott Street balconies

Right : view looking up. The balconies are off the waiting rooms adjoining the lift halls at each floor. The structural soffites are fairface concrete, painted white. Tops are lead covered and cheeks are cast lead. Side railings are bronze and the fronts are single sheets of armour-plate glass gripped by the bronze railings

Original detail section by David Aberdeen

Existing balcony with bronze balustrades and glass panel

Proposed balcony with penny bronze balustrades and framed glass front panel. Redundant lgiting is removed

3.4 Historical assessment of areas affected

The five cantilevered concrete balconies on the Dyott Street return of the Great Russell Street frontage are an important part of the original composition and are therefore of high architectural and historical interest. The balconies were off the waiting rooms adjoining the lift lobbies at each floor, which are now used as syndicate meeting rooms. The structural soffits are fair faced concrete, painted white. The tops are lead covered and side cheeks are cast in lead. The side railings are bronze, fixed to the side cheeks through preformed pockets in the concrete structure. The balcony fronts are single sheets of toughened safety glass gripped by bronze patches.

3.5 Heritage Impact Assessment

Following the failure of the toughened glass panel to the first floor balcony described in section 3.1 above, all of the glass panels have been removed in case of further failure and risk to the public. This has had a negative impact on the building's appearance and it is essential that the glass panels are reinstated.

In order to prevent any risk of the glass falling onto the street in the future, the replacement panels will be toughened and laminated so that they hold together in the event of breakage. The glass panels will therefore be framed with very slender bronze frames to minimise the visual impact of this change. The existing bronze balustrades will be replaced and adapted to incorporate the framed glass panels.

The replacement of the glass panels will have a positive impact on the architectural and historic interest of the building.

Exterior view of Congress House with Dyott Street Balconies to the left (1958)

4.0 - 5.0 Access Statement & Conclusion

4.0 Access Statement

The courtyard is not accessible and this will remain so following the canopy installation. The proposed canopy over the courtyard will therefore not affect access within the building.

The proposed work to the Dyott Street balconies will have no affect on access within the building. Currently the balconies are not accessible due to safety concerns.

5.0 Conclusion

This report has explained the reasons why a protective canopy is required over the courtyard at Congress House and why replacement balustrades are needed to the balconies facing onto Dyott Street. The proposals include:

- An canopy of inflated ETFE cushions supported on a lightweight steel structure spanning over the courtyard to protect the original roof to the Conference Hall
- Removal of the glass over-cladding to the Conference Hall roof which was added in 1996 and which is now failing
- Refurbishment of the original hexagonal glass coffered roof over the Conference Hall with reinstatement of views across this roof to the Epstein sculpture
- Re-lighting of the Epstein sculpture
- General cleaning of courtyard elevations with some re-decoration where required
- Removal of the black metal mesh to the west façade of the Council Chamber
- Refurbishment of under-used balconies to sixth floor offices
- Replacement of the balustrades to the Dyott Street balconies in penny bronze finished steel with a clear glazed panel to the east face

In the preparation of the design the following have been carefully considered and incorporated:

1. The proposals have been developed in consultation with English Heritage and London Borough of Camden Conservation Officer following a pre-application submission (Ref. 2014/6764/PRE). This process produced 'in principle' support subject to detail development, which is now incorporated in this submission.
2. The proposals provide a sensitive, low-impact and fully reversible solution to the protection of the Conference Hall roof and to the reinstatement of the balustrades to the Dyott Street balconies.
3. The proposals provide the welcome opportunity to reinstate views of the original Council Chamber east glazing and of the hexagonal glazed Conferece Hall roof.

We therefore look forward to the Council's support for this Listed Building and Planning application

Hugh Broughton Architects
London, December 2014