3.4 Existing Building

The site consists of several existing buildings; KOKO, The Hope & Anchor Pub, 1 Bayham Street, 65 Bayham Place. A commentary of these buildings is described below.

3.4.1 KOKO

The existing Grade II listed building was built c.1900 by architect W.G.R. Sprague. The building was originally designed as a theatre and has since had a variety of uses including a cinema, BBC studio and is currently a live music venue. Having changed names several times during its history, the property reopened as KOKO in 2004.

Original drawings from the London Metropolitan Archives and site observations suggest that the building is constructed from loadbearing masonry walls on corbelled brick footings over mass concrete strip footings.

The existing floors appear to consist of both concrete slabs and concrete filler joist floors supported by the loadbearing walls.

The masonry walls appear to be of solid construction which vary in thickness throughout the building.

The roof structure over the main auditorium consists of a series of steel trusses spanning north-south and supported on loadbearing masonry walls. A concrete filler joist slab spans between the trusses and is concealed by the existing roof finishes. The existing decorative ceiling to the auditorium is supported by joinery fixed to the underside of the steel trusses. There is a fall in the existing roof from the Crowndale Road elevation towards Bayham Place. The roof also pitches at the Bayham Place elevation matching the profile of the existing roof trusses.

The archive drawings suggest the original auditorium roof may have consisted of trusses spanning east- west, taking support on the proscenium wall, indicating that the north-south trusses may not be original. A report by Sinclair Johnston Conservation Engineers from July 2017 (included in Appendix I) supports this view, concluding that neither the trusses nor the filler joist slab above would be a typical form of construction in 1899. In addition, a concrete filled opening in the proscenium wall is compatible with the original architect's drawings.

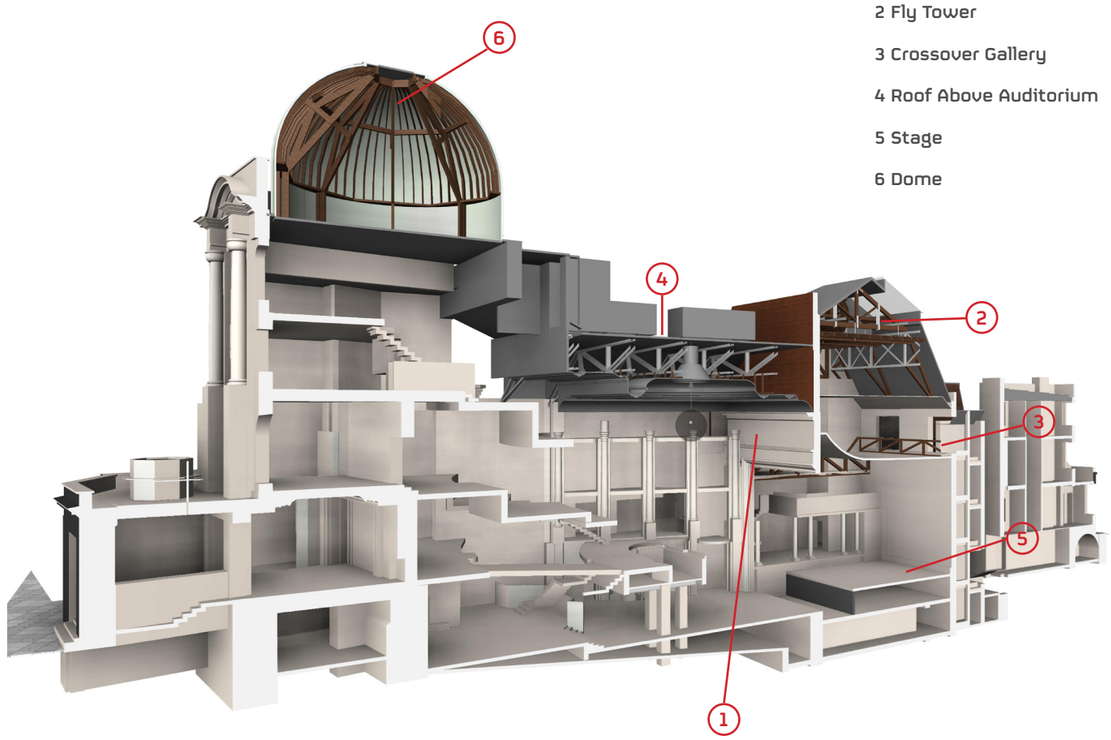
The fly tower galleries, located approximately 6 m above the main stage, consist of timber framed floors supported on timber trusses spanning between the masonry walls on the east and west elevations. An additional truss spanning between the two east-west trusses, supports another high level timber crossover gallery at the rear of the stage. Two steel framed galleries with checker plate floors also exist at approximately 3.5 m above the north and south side of the stage. The construction of these stage galleries indicates they are not original.

The existing dome roof above the front façade is of timber framed construction. The floor to the dome is a concrete filler joist slab supported on steel plate girders. The dome previously housed a number of water tanks.

The stage appears to be of concrete construction with the soffit visible from the sub-basement cellar.

The existing auditorium floor is of timber construction. Following review of the archive drawings, it is understood that the floor is suspended above the original sloping auditorium floor by approximately 700mm next to the stage.

The Bayham Place elevation consists of one or two storey structures, and provides back of house accommodation and staircases. The slabs and staircases appear to be of concrete construction with encased steel, and are supported on loadbearing masonry walls.



Existing long section view

Existing roof structure over KOKO auditorium

Photo of existing flytower roof structure

3.4.2 The Hope & Anchor Pub

Historic maps indicate that a public house has been located on the corner of Crowndale Road and Bayham Street since 1875. A single storey building with flat roof exists over the entire footprint and has a single storey basement. The pub rises to three storeys with a flat roof over part of its plan and is stepped back from the adjacent roads. The pub is constructed from timber joist floors supported on both loadbearing masonry walls and a series of internal loadbearing timber walls. The single story flat roof at the south side of the pub is a concrete filler joist slab supported on an array of steel beams.

The existing basement construction consists of masonry walls to the Crowndale Road and northern elevation. A series of brick vaults are located along the Bayham Street elevation. The vaults appear to extend below the existing pavement and support the ground floor façade above. The vaults bear on clay at varying depths and the other masonry walls bear on corbelled brick footings at varying depths. The basement abuts KOKO at its western elevation. The basement slab is a ground bearing mass concrete slab which varies in thickness between approximately 100 – 200 mm.

An open yard exists at ground floor to the rear of the pub. This is concealed by a single storey building to the Bayham Street elevation.

3.4.3 1 Bayham Street

A four storey masonry building fronts Bayham Street and is located between the rear of the pub and the properties along Bayham Place. The façade is in keeping with similar properties to the north along Bayham Street. The property has a mansard roof. It consists of timber joist floors supported on masonry walls and a series of internal steel beams and columns. The building appears to have been refurbished internally and is joined with 65 Bayham Place. It is understood it was most recently used as offices.

The Bayham Street masonry façade appears to be supported on a single brick corbel footing. The party wall with The Hope & Anchor consists of a masonry wall supported on a concrete strip footing.

3.4.4 65 Bayham Place

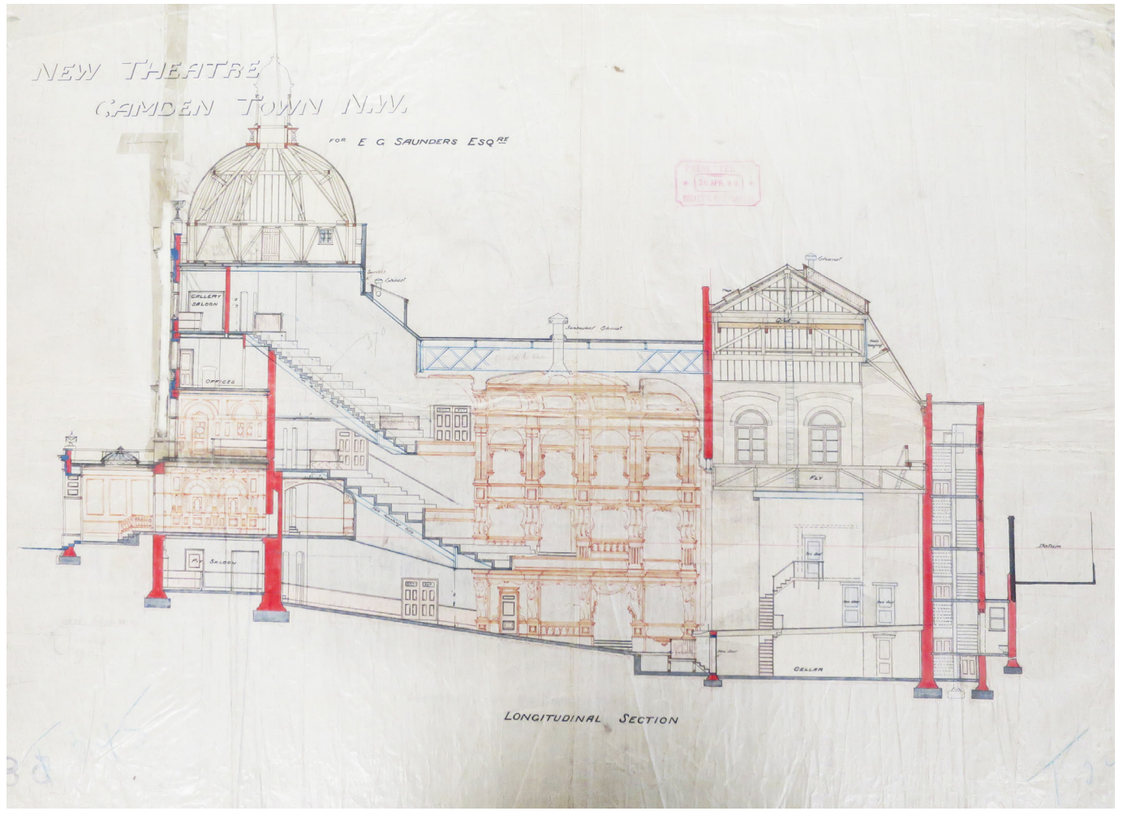
65 Bayham Place is a three/four storey property which borders Bayham Street and Bayham Place. It consists of timber joist floors supported on masonry walls and a series of internal steel beams and columns. The building appears to have been refurbished internally and is joined with 1 Bayham Street. It is understood it was most recently used as offices.

The trial pits to the Bayham Place and Bayham Street elevations typically exposed masonry walls supported on mass concrete strip footings. A trial pit exposed the party wall to KOKO with the masonry wall on a single brick corbel footing. The existing floor was found to be a ground bearing concrete slab approximately 200 mm thick.

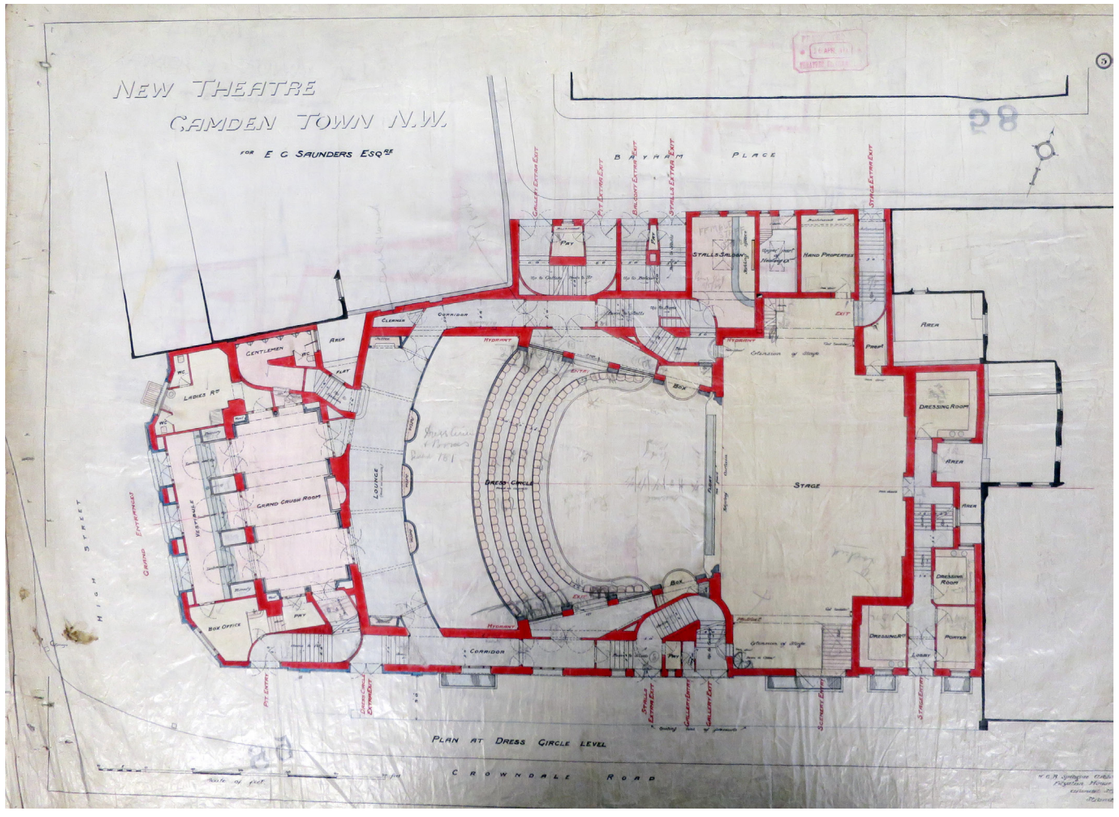
3.5 Neighbouring properties

The site shares one party wall at the boundary between KOKO and the property at 2-4 Camden High Street. The neighbouring building is understood to be a 4 storey RC frame clad in masonry. No works are proposed at or adjacent to this boundary.

RSK have undertaken a ground movement assessment for the proposed works with their conclusions summarised in section 6.4.



Archive drawing - Original section through KOKO



Archive drawing - original ground floor plan of KOKO

4 Intrusive Investigation Summary

In addition to the trial pits carried out by RSK as a part of the geo-environmental site assessment in November 2016, further intrusive investigations have been carried out to gain a better understanding of the existing structures of KOKO and The Hope & Anchor Pub. No investigation works were carried out in 1 Bayham Street or 65 Bayham Place as these two buildings will be demolished as a part of the proposed works. Site Reports from the investigation works have been included in Appendix J.

4.1 KOKO

The following investigations were carried out by Faithdean and Sandberg, and were reviewed by HTS during July 2017:

- Bricks and mortar samples were extracted to test for compressive strength and to gain an understanding of the mortar properties. Sandberg issued results of the material testing in report 60082/S/1 dated 17 August 2017. The mortar was typically found to be a hydraulic, semi-hydraulic or non-hydraulic lime with a few exceptions where Portland cement and sand mix or a cement, lime and sand mix was found. The masonry was predominantly found to be reasonably high strength, typically above 14 N/mm2, single frog bricks.
- Four trial pits were carried out in the basement of KOKO. The trial pits typically exposed corbelled brick supported on concrete strip footings of dimensions and build-ups similar to the trial pits carried out by RSK. One area of the sub-basement has not yet been able to be accessed for foundation investigations due to the presence of asbestos containing materials. The trial pits are proposed to be carried out following removal of the asbestos containing materials.
- Wall finishes were removed to expose the existing wall and lintel construction in several locations. The lintels above existing openings are typically concrete encased triple steel I sections of varying size.
- Timber floor boards were lifted to determine the size, spacing and supports of the timber joists supporting the gallery floors above the stage. The floors on the north and south sides of the stage are typically 30 mm thick tongue and groove floor boards supported on 180x80 timber joists at approximately 650 mm centres. The high level walkway at the rear of the stage comprises 30 mm thick tongue and groove boards on 100x50 timber joists at approximately 600 mm centres.
- Finishes to the beams supporting the roof and dome floor were removed to determine the original construction. The existing beams are steel plate girders supporting a concrete filler joist floor. Concrete was also locally broken out to determine the existing filler joist size and spacing.
- Finishes to the top side of the roof were locally removed in several locations to allow the roof build-up and slab thicknesses to be confirmed.

4.2 The Hope & Anchor Pub

The following investigations were carried out by Faithdean and Sandberg, and reviewed by HTS during July 2017:

- Bricks were extracted in various locations and levels to test for compressive strength and to gain an understanding of the mortar in various locations. Sandberg issued results of the material testing in report 60082/S/1 dated 17 August 2017. The mortar was typically found to be a hydraulic, semi-hydraulic or non-hydraulic lime with a few exceptions where Portland cement and sand mix or a cement, lime and sand mix was found. The loadbearing masonry façade was observed to be in poor condition, with the brick testing returning weaker and more variable strengths than those in KOKO. Decaying embedded timber was also noted in the loadbearing brick walls in several locations.
- Two trial pits were carried out in the basement. Both trial pits showed the loadbearing masonry walls are found directly onto the clay between 350 – 400 mm below existing slab level, similar to that found by RSK. The existing ground bearing concrete slab is approximately 150 mm thick and is bearing on made ground over clay.
- Ceilings and wall finishes were removed in several locations to confirm the superstructure construction. The works confirmed that the upper floors are constructed from timber floor boards on timber joists supported by loadbearing walls. The timber floor boards were typically not level and observed to be in poor condition on all floors.
- The stepped facade at first floor on the Bayham Street elevation was confirmed to be supported by a solid timber beam spanning between a timber post and a double steel I section transfer beam. The steel transfer beam is supported on double circular cast iron columns.
- Ceiling finishes were removed to expose the steel beams supporting the single story flat roof at the south side of the pub. Extensive corrosion was noted to the bottom flange of the steel beams at the Crowndale Road elevation.

The investigation works in the Hope & Anchor concluded:

- The existing timber floors do not have the capacity to support the required loads for the proposed function space and private members club. Extensive and intrusive structural works would be required to upgrade the capacity to meet the loading demands required by the design standards. The timber joists would require furring and floor boards would require replacement to obtain level and complete floors. Rotting timber was also noted beneath the ground floor and it is suspected that the proposed works would expose further defects in the existing structure.
- The existing transfer structures at high level ground would need to be strengthened/replaced to resist the increased loads due to the proposed use and additional storey.
- The existing façade would require extensive repairs to be retained and re-used. Likely repairs would include removing all decayed embedded timber, replacing decayed timber lintels and repointing.

Poor condition timber beam in The Hope & Anchor

Poor condition timber floor boards in The Hope & Anchor

Trial pit in KOKO

Poor condition brickwork in The Hope & Anchor

Trial pit in KOKO

Corroded steel roof beams in The Hope & Anchor

5 Proposed Works

The proposed structural works are illustrated in detail on the HTS drawings in Appendix A and are summarised as follows.

5.1. 'Sky Lobby'

5.1.1 Superstructure

The 'Sky Lobby' is proposed to be a steel framed roof extension above the existing KOKO auditorium roof. The floor to the new 'Sky Lobby' will consist of a concrete slab on profiled metal decking supported by long span steel beams. Steel trusses spanning north-south across the width of the building will support the floor and prevent any loading on the existing roof structure which spans over the auditorium.

The long span steel trusses will be supported on four new steel columns fed through the existing building. The western columns have been positioned in back of house areas and corridors, so they do not pass through the existing auditorium. At the location of these supports, it is proposed to chase the existing masonry walls over their full height by approximately 200mm to enable the steelwork to be partially recessed and tied into the existing structure for lateral restraint. The existing masonry will be locally stitched and bonded to form the recess and the new columns will be tied back to the existing walls using resin anchor fixings. The eastern columns have been located within existing recesses adjacent to the proscenium wall. The new columns will be tied back to the existing wall using resin anchor fixings for lateral restraint. The full height columns will need to be spliced during construction between adjoining sections.
A glazed steel framed roof will be supported from the new trusses and beams. A new lightweight steel staircase with a glazed roof will link the 'Sky Lobby' to the existing timber framed Dome proposed to be used as a bar area.

5.1.2 Substructure

The four 'Sky Lobby' columns are proposed to be supported on new cantilever piled foundations. The local floor finishes within the existing auditorium will be temporarily removed to enable a reduced height piling rig to install the new piles proposed to support the columns. The area surrounding the foundation works will need to be protected during construction and the floor finishes will be reinstated following the works. Two piling contractors, Berry Piling and GSS, have visited site and have confirmed the proposal as achievable.

5.1.3 Stability

The concrete slab of the 'Sky Lobby' will act as a rigid diaphragm to distribute lateral loads resulting from wind to the vertical stability elements. In the east-west direction, the stability of the 'Sky Lobby' will be provided by the existing loadbearing masonry walls either side of the auditorium. Cross bracing will be utilised on the north side of the building to connect the concrete diaphragm to the reduced height masonry wall. The fewer number of existing masonry walls in the north-south direction means justification of the existing loadbearing walls in this direction to be more difficult. Consequently, a new steel cross braced frame on the north side of the proscenium arch is proposed to resolve the horizontal force in this direction. The new frame extends to the basement and will be supported on piled foundations.

5.2 Hope & Anchor Pub

Following the intrusive investigations, options were explored to retain the existing structure for the proposed development. However, the condition of the existing building and the proposed open plan function space, private members club and rehearsal room established re-use of the structure to be impractical.

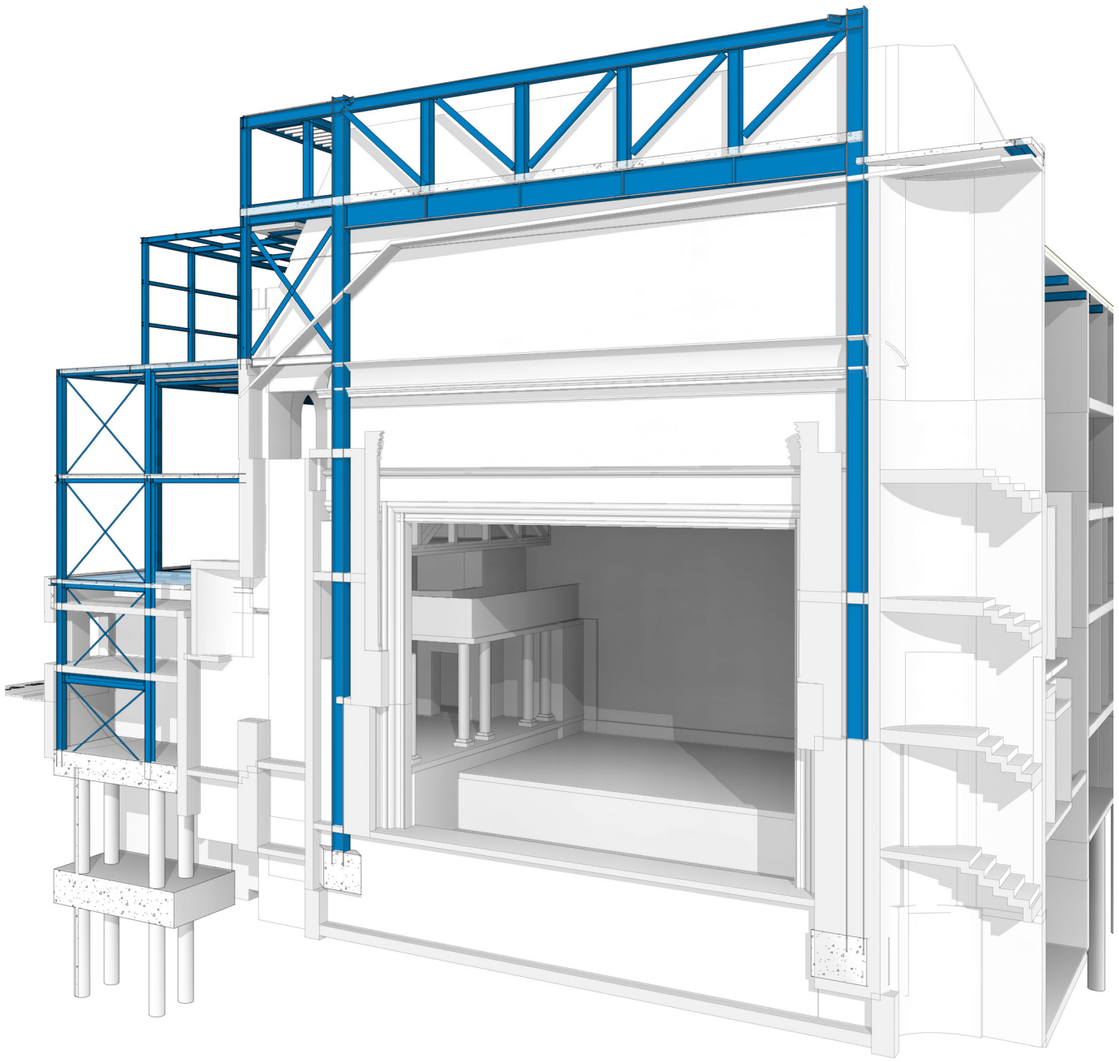
As such, a decision was made to demolish the existing structure whilst retaining the existing, culturally significant, façade at the ground and upper floors. All retained facades will be supported by temporary works during construction.

5.2.1 Superstructure

The Hope & Anchor is proposed to be re-built with concrete metal deck slabs supported by a steel structure inside the existing façade. The steel frames comprise non-composite universal column section beams with the concrete slab within the steel depth to minimise structural depth. To keep the space open plan at each floor, the beams span east-west across the width of the building. At high level ground floor, two steel plate girder transfer beams are proposed support the façade above and to avoid numerous internal columns. The mansard roof above the rehearsal room is proposed to be timber framed.

The existing loadbearing masonry façade will be tied into the new structure at each floor level to provide support when subject to horizontal loads from wind.

Sections of the north and west upper façade walls which will become internal in the proposed condition are to be demolished to reduce loads on the transfer structures at high level ground. An existing wall at lower ground level is also to be removed to simplify construction of the new foundations required to support the new steel structure.



Proposed 'Sky Lobby' bracing