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DESIGN AND ACCESS STATEMENT

Former Wythenshawe Bus Garage
Ref: 2096

Wythenshawe Bus Garage received Listed Building consent for application reference 137428/LO/2023, dated 15 November 2024. As one element of that consent, it was intended that the glass block rooflights, on the spine of the building and on the upper slopes of the roof, would be reinstated with as close a match to the original as possible. The historical photographs provided evidence for what appear to be glass blocks and the proposals included the reinstatement of the original design for the rooflights.

It must be said that no close-up historical photographs or drawings have been found. Scrutiny of the old drawings, photographs and newspaper articles does not reveal exactly how these panels were constructed and whether they were fabricated in-situ.

The majority of original rooflights had been replaced, possibly in the 1970's, with an aluminium patent glazing system with Georgian wired glass panes. Where the pitch was too shallow for patent glazing, the openings were infilled with corrugated metal sheet overlaid with fibreboard and bituminous felt roofing. This was prior to the closing of the Northenden Bus Garage on 25 October 1986. Given the size of this building, the enormity of the task and the costs involved, it must be assumed that must have been some degree of failure of the original glass block rooflights. Glass block panels do rely on steel reinforcement to retain structural integrity and quality of the concrete grout between the glass units to maintain weather tightness. In the event of water infiltration, the eventual failure of the units would be inevitable. A contributing factor may have been the inability to clean the rooflights, leading a drop in natural light levels. Manchester was known to have the most polluted air in the country and it wasn't until after the Clean Air Act in 1956 that air quality could start to improve. The sulphuric acid occurring when rain falls through air containing sulphur dioxide is a known cause for the deterioration of concrete.

Access to inspect the roof from the outside prior to making the application for Listed Building Consent had been severely hampered due to the fall arrest system being condemned. Limited internal inspection was enabled with the use of a 'cherry picker'. Closer internal inspection was achieved when concrete testing was carried out.

It is likely that the glass block rooflights were formed from prefabricated units fitted together on the roof. Glass block panels are very heavy, thus restricting the size of the panels to manageable units. How they were then secured is not obvious as there is no visible evidence of previous fixings. Unfortunately, there are no areas of glass blocks remaining, so that there is no actual example to seek to replicate.

The patent glazing was already installed as a replacement for the glass blocks at the time of Listing in 2001. However, the listing description does allude to the original rooflights as "individual square prisms". The patent glazing is milled aluminium

supporting a mixture of Georgian wired glass and polycarbonate panes. This would now be described as a fragile roof light system. Aging of the system has led to a failure of the system, with panes of glass falling form the roof, causing significant damage but thankfully no injury or loss of life.
It should be noted that the large original windows of this building are constructed of an aluminium patent glazing system. Therefore, as a construction material on this building, aluminium is not inappropriate.

The replacement of the rooflights continues to be a pressing issue in maintaining this building. The Pavement Light Company and Luxcrete have been approached to provide solutions to the glass block rooflights. However, it became clear that the technical, logistical and health and safety challenges presented could not be overcome and the firms approached have declined to be involved.

There are very few companies making rooflights of this type. One company, New Age Glass in Chichester were paid to make a sight inspection whilst concrete testing was being carried out. They do make glass block paving utilising steel reinforced concrete frames and another range using traditional cast-iron frames. During the visit they expressed concerns about access and potential loadings and despite repeated requested, they failed to show any further interest in this project. Enquiries have extended to companies on Europe, with no response. Therefore, no other suppliers have been identified for the replacement of the glass block roof lights.

In the meantime, the existing patent glazing continues to fail and present a constant threat, not only the building users but to the building itself as the lack of proper weathering hastens deterioration of the concrete structure. The roof finish is being replaced but the leaking rooflights still present an issue. It therefore considered prudent and not inappropriate take action to replace the rooflights with a patent glazing system. This does not preclude the eventual reinstatement of glass block rooflights but does preserve the building in the meantime.

Reglazing of the existing patent glazing bars has been considered. However, current guidance, safety requirements and the use of untested components pose a significant risk, not only on those carrying out such work but also the building owners. As such, this action would be legally indefensible and as such would amount to negligence by all parties.

The best alternative solution is therefore to replace the patent glazing with a new patent glazing system that can meet current guidance and regulations.

Options considered are:

1. Like for like fragile solution. This would be traditional patent glazing bars with sight lines similar to the existing rooflights supporting either Georgian wired glass or wire-effect polycarbonate sheet.

2. Like for like non-fragile solution. This would be traditional patent glazing bars with laminated glass panels. A wired effect may be possible by printing onto the glass.
3. Non-fragile solution. This would box bar patent glazing with polycarbonate panels.

The preferred solution is Option 2. This will maintain an appearance very similar to the existing rooflights whilst being relatively safe. In areas where the roof could be accessed for maintenance. Option 1 could be considered suitable for use on the central raised rooflight area where there is no danger of needing to be on the part of the roof. The central area is raised to around 1m above the roof area and can be cleaned or maintained without danger of falling through. Wired effect polycarbonate has been installed on various Listed buildings, especially stations, where patent glazing has been replaced. We therefore consider this to be an appropriate and safe substitute to glass where a fragile solution can be justified.

Mansafe System

The existing mansafe system on this building has been condemned and made permanently inaccessible. A CAT access ladder on the Harling Road side is not present and the existing CAT ladder is rusted and insecure. The rooflights are fragile and not considered safe to allow access to the roof for maintenance. The entire system is to be replaced to conform to BS 7883:2019 and Work at Height Regulations 2005.

Flat Roofs

The flat roofs have been received a replacement roof covering as per the previous Listed Building Consent. The roofs were ponding as the existing flat roof had a slight negative fall. Tapered insulation was included in the replace roof finish build up to overcome this issue. The perimeter of the roof was built up with timber over the existing parapet copings to protect the new roof finish. This has been left with UPVC trim on the fascia. This is to be covered with polyester powder coated fascia to provide a clean finish to the perimeter.

Access is not affected by these proposals