

Statement of 'Cooling Hierarchy' in the design of a mezzanine insertion at The Armoury Gym, 25 Pond Street, London, NW3 2PN

Planning Application Ref: 2023/1838/P

Introduction

The [Armoury Gym](#) is a community gym run by the [Jubilee Hall Trust](#) - a charitable sports trust with the goal of building 'strong healthy communities by promoting the fitness and wellbeing'. The gym is situated in a large, locally listed drill hall, dating from the end of the 19th century. Daykin Marshall Studio were engaged by the JHT to design the insertion of a mezzanine floor to an ancillary building attached at the rear of the main hall. This part of the building is two storeys tall, and included a double height space. By inserting a mezzanine floor to split the double height space the usable floor area has been doubled to create an extra fitness studio. A crucial part of the brief was that the new fitness studio was fully accessible to all. Not only did the mezzanine insertion create an extra studio, it created a studio fully accessible to wheelchair users.

Air-Conditioning Plant Application

This statement accompanies Planning Application Ref: 2023/1838/P for minor alterations to the exterior of the building and the addition of external air-conditioning plant in the yard at the rear of the building. The plant will be surrounded by an acoustic enclosure. There is an accompanying acoustic report demonstrating compliance with Camden's Local plan to minimise noise pollution.

How the London Plan's 'cooling hierarchy' has informed the building design

This project has a limited budget and scope for external changes to the building. The primary works have been internal, to insert a mezzanine floor and ramp to form a new fully-accessible fitness studio. Therefore, as a minor retrofit project, the opportunities for introducing new cooling strategies was limited. However, best practice has been followed in considering options in the cooling hierarchy:

-Minimising internal heat generation through energy efficient design:

Lighting has been replaced with low energy, low temperature fittings. However, the main heat source in the new spaces are people exercising! The following points detail ways to mitigate overheating.

-Reducing the amount of heat entering the building in summer:

The altered spaces are at the rear of the building on the north elevation. All existing and the limited amount of new fenestration faces north greating limiting any solar gain (without needing to consider external shading devices). Insulation to the spaces has been upgraded where possible. Existing ceiling height did not allow for adding floor insulation, and budget constraints did not allow for adding external wall insulation. However the flat roof has been replaced and the insulation upgraded as a warm deck to modern building standards. This should greatly reduce both heat loss in winter and heat gain in summer.

-Manage heat within the building through exposed internal thermal mass and high ceilings:

The concrete floor to the lower floor studio has been retained as an element of thermal mass. Ceiling heights are greatly limited by the existing building form and could not be raised.

-Passive ventilation:

Passive ventilation to the ground floor studio is provided by existing opening windows. The lower floor studio has two new windows inserted to gain access to fresh air and passive natural ventilation. However, due to the layout of the existing spaces and adjacent buildings, windows can only be placed in one side, removing the possibility of cross ventilation needed for passive ventilation to be the sole cooling measure.

-Mechanical ventilation:

The ground floor studio uses an existing mechanical ventilation system, and a new system has been inserted in the lower floor studio. A larger MVHR system to successfully cool the gym spaces without suffering significant heat loss was considered, but was prohibitive in terms of cost and the internal area required for the plant.

-Active cooling:

The heat load of these exercise spaces is higher than average due to the nature of the activities taking place. As design options for significantly altering the existing building fabric were very limited, and other options in the cooling hierarchy are not sufficient or prohibitively costly, air-conditioning is proposed to ensure the spaces do not overheat in summer months. The existing orientation of the building, and inclusion for a much passive ventilation as possible, should limit the reliance on air-conditioning.



Photo 1 - The Armoury Gym from the street



Photo 2 - The main gym space (old drill hall)

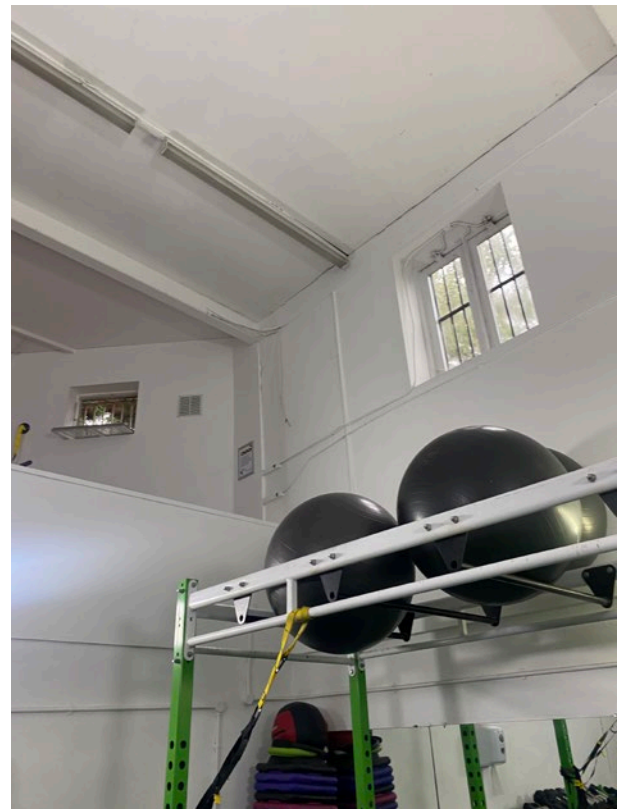


Photo 3 - Double height ancillary space



Photo 4 - Rear facade of building north facing windows only



Photo 5- New fully accessible fitness studio at ground floor - North facing windows to one side only



Photo 5- New fitness studio at lower floor - North facing windows to one side only