Kensington Queensmill School
Design Note

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DOCUMENT CONTROL & NOTES

Company Details:

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Contents

1 Factors to be Considered

Kensington Queensmill and Barlby primary School used underfloor and substructure insulation materials, this design notes seeks to show the risk of a fire or harm to its occupiers.

The development has been provided with a commercial sprinkler system, designed and installed in accordance with BS EN 12845:2015.

The external wall build up is brick and block, the rain screen insulation element is rockwool (non-combustible).

The proposed building will consist of two different parts, Barlby primary school and Kensington Queensmill, a special needs school.

It is proposed that both schools will be fitted with a Category L1 fire detection and alarm system, which means that all escape routes, high risk rooms and rooms opening onto stairs will be provided with automatic detection, thus providing the earliest possible warning.

Given the fire safety provisions within Kensington Queensmill and Barlby primary school, the risk of a fire or harm to occupants is low.

2 Introduction

2.1 Scope

HGJ Fire Ltd have been appointed by Kensington Queensmill ("*the client*") to conduct a review of the external wall façade system on Kensington Queensmill School (KQ). This report will examine the wall build up associated with KQ.

This review is intended to document the general install quality of the specified façade materials in accordance with the relevant Fire Safety Building Regulation – Approved Document B, Vol.1, 2010 edition with 2019 amendments (AD B herein), materials manufacturer/suppliers installation specifications and recommendations (as supported by relevant product fire test data), as well as recognised best practise installation guidelines.

The findings and opinions expressed are based on the conditions encountered and/or the information reasonably available at the date of issue of this document and shall be applicable only to the circumstances envisaged herein.

2.2 Site Location

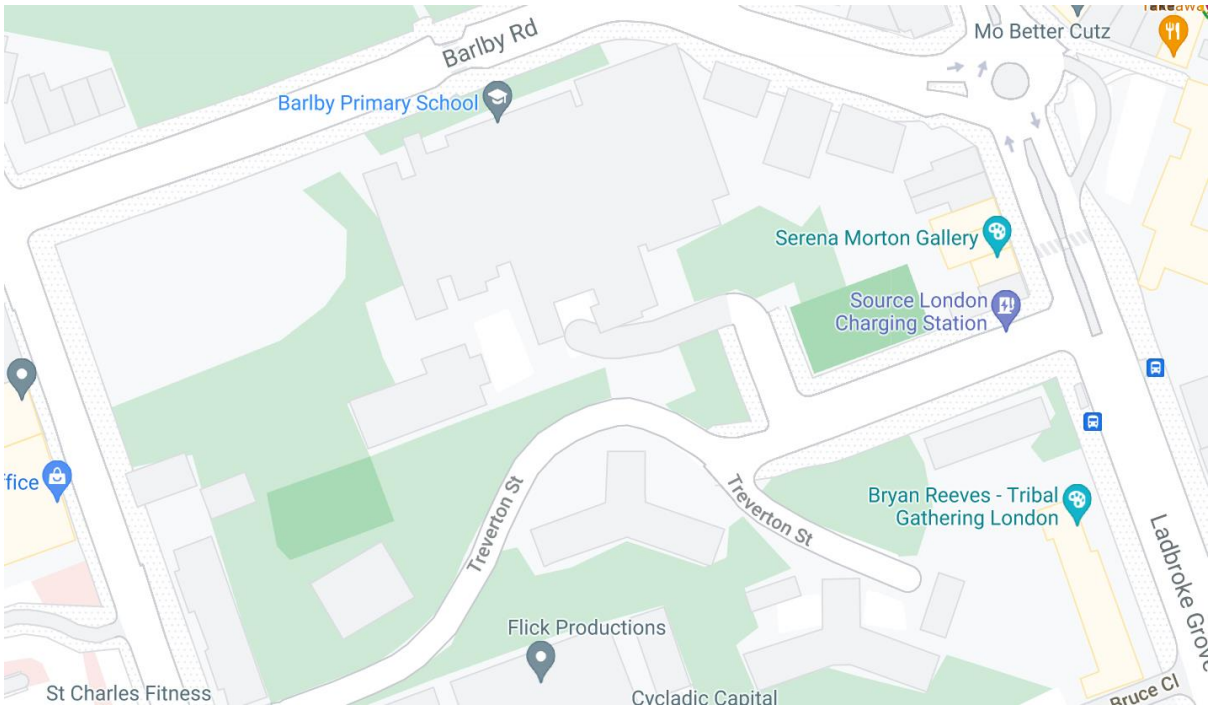

Figure 1 - site location

2.3 Building Description

The development consists of a single new built building which is shared by a primary school and a special need school. The primary school has 3 no. floors spanning ground, first and second floor levels. The special needs school has three floors spanning lower ground, ground and first floor levels.

Most of the façade is brick with rainscreen in some areas. The building will be provided with a sprinkler system designed and installed to BS EN 12845:2015.

2.4 Primary Legislation

The design of the development requires compliance with the Building Regulations 2010. The objective of this fire design note is to ensure this building meet the fire safety requirements of Schedule 1 of Part B of the Building Regulations.

For fire safety, the functional requirements of the Building Regulations are:

- Requirement B1 – Means of warning and escape
- Requirement B2 – Internal fire spread (linings)
- Requirement B3 – Internal fire spread (structure)
- Requirement B4 – External fire spread
- Requirement B5 – Access and facilities for the fire services

Regulatory Reform (Fire Safety) Order: 2005

The Regulatory Reform (Fire Safety) Order: 2005 (FSO) is a primary piece of legislation relating to fire safety in existing, non-domestic premises and the common areas of residential buildings and is enforced by the local Fire Service Authority.

Responsibility for ensuring that the requirements of the Order are met, rests with the 'Responsible Person', who must undertake (or cause to undertake) a risk assessment for the purpose of identifying the fire precautions required.

FIRE SAFETY OBJECTIVES

This report aims to satisfy the following statutory fire safety objectives.

Occupants' life safety

The occupants must be able to escape the building without being exposed to hazardous or untenable conditions. This shall be satisfied by meeting the Requirements B1 to B3 of The Building Regulations 2010 (as amended in 2019).

Protection of adjoining buildings

Structures must not collapse onto adjacent property and fire spread by radiation shall not occur. This shall be satisfied by meeting the Requirement B4 of The Building Regulations 2010 (as amended in 2019).

Firefighters' life safety

Firefighters must be given a reasonable time to rescue any remaining occupants before hazardous conditions develop or structure collapse occurs. This shall be satisfied by meeting the Requirement B5 of The Building Regulations 2010 (as amended in 2019).

3 INSPECTION FINDINGS

At the time of inspection all external façade works were complete, however, photos were taken by an independent property consultant, photos for fire stopping were taken on site when inspected by HGJ Fire.

3.1 Substructure

The Kingspan product installed at KQ and have been used in the following areas:

The substructure; Perimeter insulation at low level around the building to damp proof the buildings. Kingspan Greenguard GG300 (GG300), an extruded polystyrene insulation (XPS), Kingspan Greenguard GG300 is a high performance fibre-free rigid extruded polystyrene insulant and has a smooth, dense skin on both faces.

The product is used for improved insulation and prolonged resistance to moisture below ground, and resistance to potential flooding identified by the flood risk assessment along Barlby Road. The use is compliant with the latest Building Regulations and approximately 1m high (figure 2 below).

Figure 2 show the encapsulation of the GG300 and figure 4 show the appearance after completion. The GG300 is incapsulated between block work on the inside of the building and brick on the outside, the cavity in between the brick and block will be filled by the GG300 and capped with cement, figure 3 below. This arrangement will make the use of the GG300 in accordance with ADB section 9.10 2010 (as amended 2019).

Figure 2 - Greenguard GG300 insulation installed at low level.

Figure 3 - Greenguard incapsulated in between brick and block

Figure 4 - Finished area

3.2 Screeded Floor

The GG300 was also used within the screeded floor, figure 5 and 6 below. The GG300 is full incapsulated within the screeded floor, making it safe in a fire environment.

Figure 5 - Insulation of Screeded floor

The Kingspan is installed between two layers of cementitious materials within the floor slab.

Figure 6 - Finished screeded floor.

The floor construction falls under B3 of the ABD 2010 (as amended 2019). The floors are constructed 60 minute fire resisting compartment floors. It is designed to form a complete barrier between the compartments and will not inhibit any fire spread with the concealed space in which it is installed.

The floors in KQ have been constructed in accordance with ADB.

3.3 Rainscreen

Rockwool Rainscreen-Duo Slab and RWA45 mineral wool insulation products are used to insulate all external walls from the ground level, up to the top of the walls at roof level. This product is non-combustible and is in line with ABD section 9. 2010 (as amended 2019).

Figure 7 - Wall Insulation-Duo Slab

3.4 The Roof

The roofing system is another product from Kingspan and use of GG300 as part of the overall roof system. The Kingspan Greenguard on the roof perimeter concrete wall upstand and is incapsulated within the roofing system. This has also been installed to and complies with the ADB 2010 (as amended 2019).

The roof construction falls under the same requirements as the external wall. With the building under 18m in height, the use of the Kingspan product is unrestricted as long as it is in accordance with B4(1) and Regulation 7(1).

The Kingspan insulation on the roof slab is enclosed in fire resistant materials (concrete slabs and large pebbles). The upstand insulation poses very little fire risk in the way it is constructed. The roof

slab will stop fire spread from below and the external wall construction at roof level prevents fire from being able to spread to the inside of the roof upstand. The roof has been constructed in accordance with ADB 2010 (as amended 2019).

Figure 8 - GG300 under the stones on the roof

Figure 9 - Parapet on both schools caped on the top of the wall.

Between the Kingspan and the external wall surface there is the concrete upstand, mineral wool and brick finish. This is closed over the fire resistant cavity closer and then the roof upstand finish on top.

3.5 Pipe and Roof Ducting Insulation

Kingspan products are installed around the majority of interior pipes in risers and ceiling voids. The product is B-s1, d0 Euro fire classification.

Since the pipework insulation falls under requirement B3(4) for fire spread in concealed spaces. ABD Vol 2 states in paragraph 9.12(e) that any pipework insulation should achieve C-s3, d2 Euro fire classification or better. The insulation used in KQ is in accordance with ADB 2010 (as amended 2019).

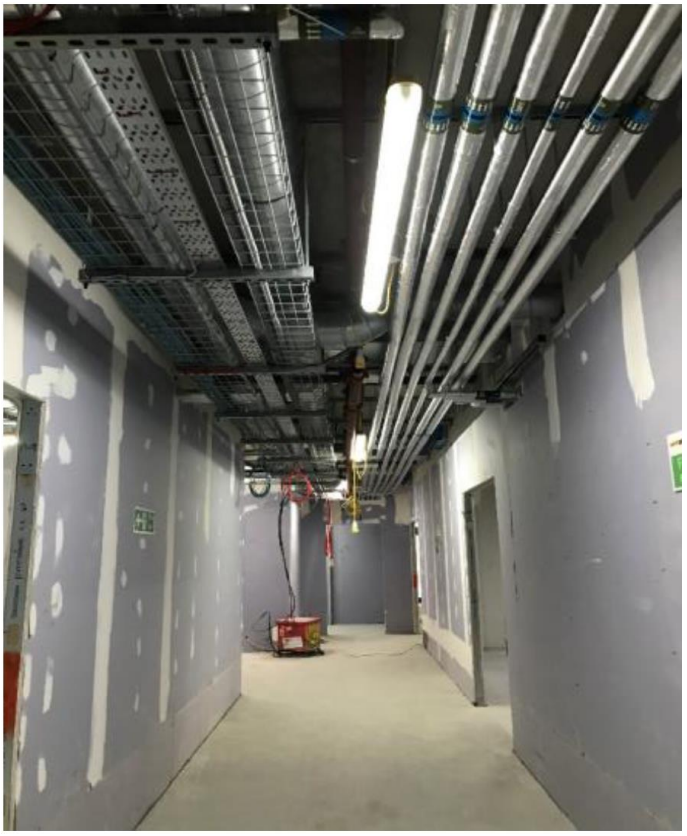

Figure 10 - Insulation on the Piping

3.6 Roof Ducting

Figure 11 - insulation around roof ducting

The roof ductwork falls under Requirement B3 and B4 as it is situated on the roof and will penetrate the roof construction, requiring fire stopping.

ADB states, in general provisions for mechanical ventilation and air-conditioning systems, that exhaust points should be sited away from combustible materials. As the building is below 18m combustible materials are allowed on the roof but ADB does not give guidance on rooftop ductwork insulation. The compliance of Kingspan rooftop ductwork insulation would depend on the location of any exhaust. Observations from construction photos show no exhausts near the Kingspan insulated areas.

4 Conclusion

This report outlines the fire safety proposals for Kensington Queensmill School and seeks to demonstrate compliance with the Building Regulations (generally in the form of the recommendations of ADB).

The designs of the school, such as the use of Kingspan insulation etc., are compliant within the areas used in comparison with the recommendations of ADB.

It is proposed that both schools will be fitted with a Category L1 fire detection and alarm system.

The development will be provided with a commercial sprinkler system, designed, and installed in accordance with BS EN 12845:2015.

The Kingspan GG300 is incapsulated between block work on the inside of the building and brick on the outside.

The Kingspan is installed between two layers of cementitious materials within the floor slab.

Rockwool Rainscreen-Duo Slab and RWA45 mineral wool insulation products are used to insulate all external walls from the ground level, up to the top of the walls at roof level. This product is non-combustible and is in line with ABD section 9. 2010 (as amended 2019).

The Kingspan insulation on the roof slab is enclosed in fire resistant materials (concrete slabs and large pebbles). The upstand insulation poses very little fire risk in the way it is constructed. The roof slab will stop fire spread from below and the external wall construction at roof level prevents fire from being able to spread to the inside of the roof upstand. The roof has been constructed in accordance with ADB 2010 (as amended 2019).

The internal pipe insulation used in KQ is in accordance with ADB 2010 (as amended 2019).

The compliance of Kingspan rooftop ductwork insulation would depend on the location of any exhaust. Observations from construction photos show no exhausts near the Kingspan insulated areas.

Given the above, it is the view of HGJ Fire that the provisions provided for Kensington Queensmill School fall under the recommendations of The Approved Document B 2010 (as amended 2019).

End of report.

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