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Stephen Warburton
Building Safety Lead
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Re: Transport House

Dear Stephen

As requested, we have reviewed the following documents:

Design Fire Consultants 2031_R001.1_Transport House_PAS 9980 Appraisal 16 June 2022
Design Fire Consultants 2031_R002.0_Transport House Sprinkler Study 21 September 2022
Warrington Fire Transport House Type 4 Fire Risk Assessment AO11997FRA 10 August 2021

PAS9980 requires (and provides detailed guidance with regard to) a holistic assessment of the probability of fire involving the façade of a building and the risk to the occupants of fire involving the façade. This assessment must consider the combustibility of the materials involved and their locations, the presence of fire barriers to limit fire spread involving the materials, and the methods by which fire may develop to involve the façade.

I can confirm that the Fire Risk Assessment of the External Wall completed by Design Fire Consultants closely follows the guidance provided in PAS9980. In particular, PAS9980 specifically references the provision of automatic water fire suppression systems (AWFSS) to reduce the probability of combustible materials in the external wall being ignited and therefore of fire spread via the façade,

G.5.2.1 Probability reduction

As an example, where sprinklers are installed, they reduce the probability of fire spread via external walls by reducing the likelihood that combustible materials/products in an external wall construction will be ignited by a fire in the building.

PAS9980 notes that AWFSS cannot control fires that may start externally to the building.

However, sprinklers cannot control fires that might start externally, and they cannot be assumed to control fire spread via the external wall construction if it is ignited.

In consequence, although sprinklers can provide viable mitigation, consideration needs to be given to the likelihood of any fire scenarios that sprinklers would not control (e.g. fires involving combustible balconies, balcony storage or external fuel loads), and the potential consequences of fire spread in the event that the external wall construction is ignited.

Guidance to consider the risk of an external fire is provided within PAS9980. As shown below, this notes that where the combustible façade materials are >2m above the ground, the scope for a fire involving a parked vehicle or skip adjacent to the façade is considered a neutral risk factor and where >5m it is positive i.e. without the need for any detailed engineering calculations with regard to the maximum heat release rate of a vehicle fire that the risk assessment of the façade should consider this mechanism for ignition of the façade as unlikely.

Table N.1 – Façade configuration risk factors

Positive	Neutral	Negative
Where a risk factor is marked with an asterisk (*), this indicates that it is notably more of a positive influence.		
N.2 Height of base of cladding above ground		
>5 m NOTE At this height, the likelihood of a fire originating externally (e.g. involving a parked vehicle or waste skip and started either accidentally or deliberately) igniting the cladding is highly unlikely.	2 m to 5 m NOTE At this height, the scope for a fire originating externally (e.g. involving a parked vehicle or waste skip started either accidentally or deliberately) igniting the cladding is considered possible, but not likely at an early stage in the development of the fire.	<2 m NOTE At this height, the likelihood of a fire originating externally (e.g. involving a parked vehicle or waste skip started either accidentally or deliberately) igniting the cladding is highly likely.

To comply with the requirements of PAS9980, DFC would have considered this guidance and this informed their conclusions.

In particular, there is only one isolated location where the combustible façade extends to <2m and the risk of fire involving a vehicle external to the building in this location is minimal in comparison to one involving vehicles in the car park. To mitigate this risk, a firestopping barrier is to be provided within the façade at first floor level which would terminate fire spread and effectively mean that for the purposes of external fire spread the base of the extensive elements of the combustible façade is >2m and therefore can be treated as neutral in terms of the façade configuration risk factor.

The suggestion of provision of sprinklers is supported by case studies and observation of actual fire incidents external to the premises. For example in December 2006, a fire occurred at a newly constructed residential care home with underground car parking in Bristol. In accordance with established principles for alternate compliance in support of building regulations (Approved Document B) the residential portion of the premises was sprinklered to allow for extended travel distances. However, the car park was not sprinklered as this was not required by Approved

Document B. Fire destroyed 22 cars and spread to upper levels via external windows. A residential sprinkler system prevented the spread of fire into the residential area and, no doubt, saved many lives with 60 residents being safely evacuated.

Of course, it must be remembered that the most likely route for fire and fire gases to cause ignition of the façade is via failure of the glazing or frames of apartment windows. Typically, double glazed windows are expected to fail at around 600C which is around the temperature expected at full fire involvement within a room (flashover). AWFSS typically actuates in response to temperature of 68C. Therefore, the provision of AWFSS also removes the risks associated with fires within apartments leading to fire spread over the façade.

Finally, it should be remembered that the aim of PAS9980 (and the routes to compliance with the Building Regulations such as Approved Document B) is to enhance life safety. The provision of AWFSS within each apartment not only reduces the risk of fire involving the façade but also greatly reduces the risk to occupants of the apartment because of fire development. This is why the provision of AWFSS protection to residential apartments has become a requirement for all new multi-storey and multi-occupied residential buildings with a top floor above 11 metres in height since 2020. It is therefore likely that people will increasingly expect AWFSS in flats with implications for the desirability of premises where they are not installed.

Kind regards

Yours sincerely,

A handwritten signature in black ink, appearing to be 'S Burch', written over a light grey circular background.

Simon Burch BA (Hons) EngTech MiFireE
Associate Principal

On behalf of Introba Consulting Ltd