

Mr J Delamar
Building Standards Manager
Building Standards
Midlothian Council
Fairfield House
8 Lothian Road
Dalkeith

Our ref: BSD2015/01 - A10180048
23 January 2015

Dear Mr Delamar,

**LOCAL AUTHORITY BUILDING STANDARDS SCOTLAND (LABSS)
REQUEST FOR AN OPINION ON COMPLIANCE WITH BUILDING STANDARDS**

STAS APPLICATION – CALA HOMES, FRASER AND HARRIS HOUSE TYPES

I refer to the recent request for an opinion by the Building Standards Division on meeting a function standard. The request relates to the LABSS Scottish Type Approval Scheme (STAS) application from CALA Homes, regarding their Fraser and Harris house types. In particular Standard 2.9 and the supporting guidance clause 2.9.8 of the Technical Handbooks (TH) regarding the use of a mechanical extract ventilation System (MEV) and the provision of a ventilation gap between the bottom edge of the door and the floor at the protected enclosure.

The house types are three storey split level designs, with means of escape from the upper floors through protected enclosures leading to exit doors.

- Fraser house type – The upper storey comprises two bedrooms with escape windows on the rear elevation. The storey is more than 4.5m above ground level (but not more than 7.5m) at the front elevation, and less than 4.5m at the rear elevation.
- Harris house type – The upper storey comprises four bedrooms. The storey is more than 4.5m above ground level (but not more than 7.5m) at the rear elevation.

The houses are designed to have an air tightness of circa $3\text{m}^3/\text{h.m}^2$ @ 50 Pascals, and an MEV system is proposed in both house types. This requires the circulation of air throughout the dwelling, including through the protected enclosure.

An enhanced fire alarm and fire detection system will be installed to follow the guidance in Clause 2.9.7 of the TH and BS 5839: Part 6: 2004 for a grade D, category LD1 system.

Specific standards and provision of the Technical Handbook on which a view is sought

Standard 2.9 requires that *“Every building must be designed and constructed in such a way that in the event of an outbreak of fire within the building, the occupants, once alerted to the outbreak of the fire, are provided with the opportunity to escape from the building, before being affected by fire or smoke.”*

Technical Context

The subject of the opinion is the installation of an MEV system and the circulation of air throughout the dwelling.

In this case the guidance provided in clause 2.9.8 of the TH for a storey at a height of more than 4.5m identifies that ‘ducted heating or ventilation systems should not transfer fire and smoke from the room of fire origin to the remainder of the dwelling.’ This is supported by a number of recommendations which aim to protect the route of escape and delay the time until smoke may spread beyond the room of fire origin.

The mechanical ventilation system within the house will re-circulate air throughout the dwelling. To enable the effective re-circulation of air, the doors in the protected enclosure require ventilation gaps between the bottom edge and the floor. The main concern being that, in the event of an outbreak of fire, the system as designed could have the potential for the rapid spread of smoke to apartments beyond the room of fire origin.

The Opinion of the Building Standards Division

The Building Standards Division has considered all information submitted with this consultation and their opinion is set out below.

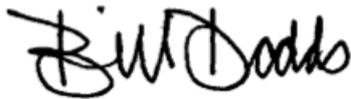
It has been identified in various guidance documents, including the BSD Ventilation Guide, that MEV systems require air transfer to take place under doors between adjoining rooms and circulation areas. Such gaps under fire doors could allow smoke transfer, compromise the ability of the fire door to fulfil its function and lead to the route of escape within the dwelling being compromised.

The guidance supporting standard 2.11 recommends that a fire detection and fire alarm system covers the principal room, the kitchen and the circulation area. Within these house types it is proposed that a more comprehensive system to BS 5839: Part 6: 2004, Grade D, Category LD1 system is installed, with detectors being provided in all apartments and rooms giving access to the protected enclosure escape route. This will provide the occupants of the dwellings with early warning of an outbreak of fire anywhere in the Fraser and Harris house types.

To limit the potential for the ventilation system drawing smoke underneath doors or through the ducting it is proposed all apartments have a hardwired, interlinked smoke alarm that is connected to the MEV system. On activation of any smoke alarm within the dwelling, the system is designed to shut down automatically and stop the forced recirculation of air. This will inhibit the rapid spread of smoke beyond the room of fire origin and provide the occupants of the dwelling with the opportunity to escape before being overcome by fire and smoke.

Having carefully considered all the information submitted by CALA Homes with regard to the STAS application for the Fraser and Harris house types, it is the opinion of the Building Standards Division that the proposals do meet the requirements of Standard 2.9 in respect of measures to inhibit any ducted heating or ventilation system transferring fire and smoke from the room of fire origin to the remainder of the dwelling.

Yours sincerely



**Bill Dodds
Head of Building Standards**