

Fire Resistance EN 1365 (series)

Ability to withstand or contain a fire and still function -

R - mechanical resistance i.e. an ability to maintain loadbearing capacity,

E - integrity i.e. an ability to maintain the integrity of the structure,

I - insulation i.e. an ability to provide insulation from high temperatures

Reaction to Fire I.S.EN 13501-1

Materials contribution to a fire -

All products, excluding floorings, are classified as A1, A2, B, C, D, E or F (with class A1 being the highest performance and F being the lowest) e.g.;

A1 - it does not fuel or contribute to the fire

F - indeterminate behavior, materials and products untested



TFRS

Consolidated Guidance on Fire Safety Provisions to Dwelling House Types

Incorporating guidance from:
Technical Guidance Document B (Fire Safety) Volume 2 Dwelling Houses 2017
and
Supplementary Guidance to TGD B (Fire Safety) Volume 2 - Dwelling Houses

Notes:

This diagrammatic guidance document has been put together to assist owners, builders and designers with regards to fire safety provisions in the 5 most common dwelling house types:

Bungalow - Page 2

Dormer Bungalow - Page 3

Two Storey - Page 4

Dormer Two Storey - Page 5

Three Storey - Page 6

The guidance within this document is not exhaustive, reference should be made to *Technical Guidance Document B (Fire Safety) Volume 2-Dwelling Houses 2017* and the *Supplementary Guidance to TGD B (Fire Safety) Volume 2 - Dwelling Houses 2017*, to ensure full compliance with Part B of the Building Regulations.

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Rev 1 - November 2022

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Common Non-Compliances Found during Building Control Inspections of Dwellings with Regards to Part B:

- | | |
|--|------------------------------------|
| 1. Installation of smoke alarms in all habitable rooms | (TGD B 2017 - Section 1.3.6) |
| 2. Use of optical smoke detectors on ground floor | (TGD B 2017 - Section 1.3.6.3) |
| 3. Correct location of detectors from other features (300mm) | (TGD B 2017 - Section 1.3.6.3) |
| 4. Height of escape windows / rooflights | (TGD B 2017 - Section 1.3.7.1) |
| 5. Fire stopping at top of party walls (max. gap of 50mm) | (TGD B 2017 - Diagram 10) |
| 6. Spacing of screw fixings to plasterboard in framed construction | (refer to manufacturers test data) |
| 7. Fire resistance provisions to upper floors | (refer to manufacturers test data) |
| 8. Fire stopping to openings in floors with open voids (metal web) | (refer to manufacturers test data) |
| 9. Fitment of cavity barriers | (TGD B 2017 - Section 3.6.3) |
| 10. Provision of simple fastenings to final exits (thumb latches) | (TGD B 2017 - Section 1.3.9.7) |
| 11. Fitment of fire doors (hinges, seals, self closer) | (refer to manufacturers test data) |
| 12. Isolation switch for PV arrays | (TGD B 2017 - Section 5.4.5.1) |

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R - mechanical resistance i.e. an ability to maintain loadbearing capacity,
E - integrity i.e. an ability to maintain the integrity of the structure,
I - insulation i.e. an ability to provide insulation from high temperatures

- ■ ■ ■ ■ RE30 REI 15
(30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)
- ■ ■ ■ ■ REI 30
(30 minutes fire resistance load bearing capacity, integrity and insulation)



Truss:

No fire resistance required to truss if it only supports the roof, **unless** used as a means of escape or is essential for the stability of an external wall. (refer to Section 3.4.4 of TGD B Vol. 2 2017)

Where truss requires fire resistance refer to *Supplementary Guidance on Fire Resistance of Trussed Roofs* (truss types achieve REI 30)

External Walls

(Table A1 TGD B Vol.2 2017):

<1m to Boundary: REI 30
>1m to Boundary: RE 30, REI 15

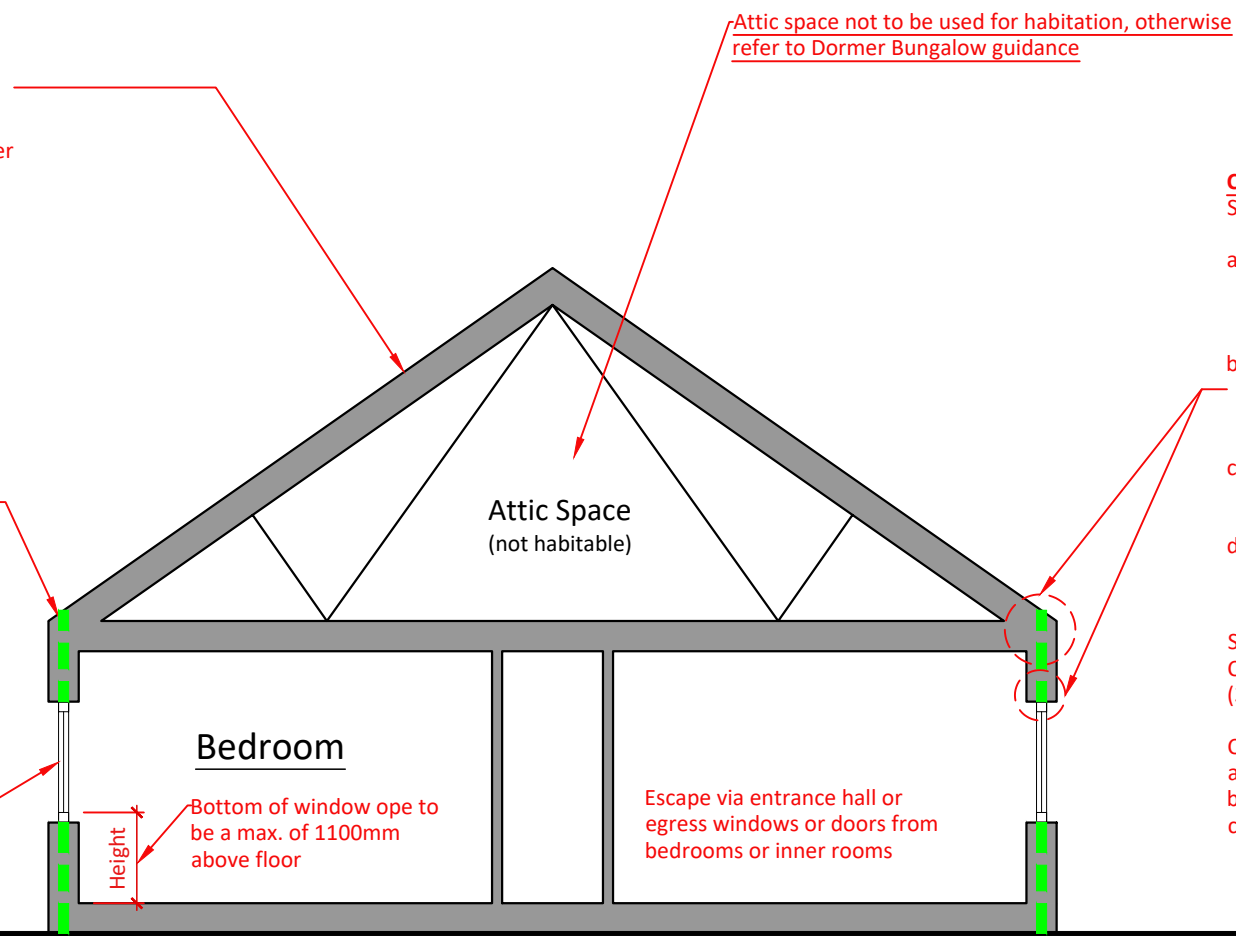
Where external walls are timber frame - refer to: *Supplementary Guidance on Fire Resistance of Walls* (wall types achieve REI 30)

For RE30, REI15 fire resistance refer to Manufacturer's test data / Agrément certification

(Note: fire resistance provision to external walls of bungalow dependant on boundary separation)

Window for escape or rescue:

Min. clear open area: 0.33m²
Min. Height: 450mm
Min. Width: 450mm



Attic space not to be used for habitation, otherwise refer to Dormer Bungalow guidance

Cavity Barriers:

Section 3.6.2 of TGD B Vol. 2 2017

- a. Top of an external cavity wall (masonry or framed construction) including any gable wall
- b. Vertically at the junction of separating wall and any such wall with an external cavity wall
- c. Above the enclosures to a protected stairway
- d. Around all openings (windows, doors, vents, service boxes etc) in framed construction

Section 3.6.3 of TGD B Vol. 2 2017
Cavity Barrier to achieve E30 EI15 fire resistance (30 minutes integrity and 15 minutes insulation)

Cavity barriers may be formed of:

- a. steel at least 0.5mm thick, or
- b. timber at least 38mm thick, or
- c. polythene sleeved mineral wool, or mineral wool slab, in either case under compression when installed in the cavity

House Type: Bungalow

Notes:

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Key Notes: (Tick off as addressed / complete)

- Final exits in accordance with Section 1.3.9.7 of TGD B Vol. 2 2017 (thumb-turn latch)
- Escape windows in accordance with Section 1.3.7 of TGD B Vol. 2 2017
- Fire detection and alarm system - LD2 or better in accordance with IS 3218
- Cavity barriers in accordance with Section 3.6.2 of TGD B Vol. 2 2017
- Fire resistance provisions in accordance with Appendix A of TGD B Vol.2 2017:
 - External walls
 - Upper floors (if applicable)
 - Roof truss (if applicable)
 - Elements supporting fire resistant construction (if applicable)

Fire Resistance EN 1365 (series)

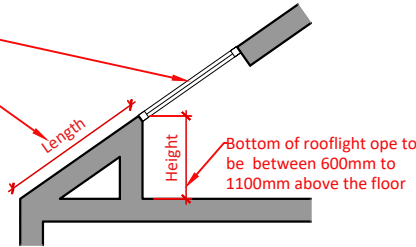
R - mechanical resistance i.e. an ability to maintain loadbearing capacity,
E - integrity i.e. an ability to maintain the integrity of the structure,
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- - - RE30 REI 15
(30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)
- - - REI 30
(30 minutes fire resistance load bearing capacity, integrity and insulation)



Rooflight Alternative:

1.7m max. from eaves to bottom of the opening section of the rooflight



Window / rooflight for escape or rescue:

Min. clear open area: 0.33m²
Min. Height: 450mm
Min. Width: 450mm

1.7m max. from eaves to vertical plane of the window

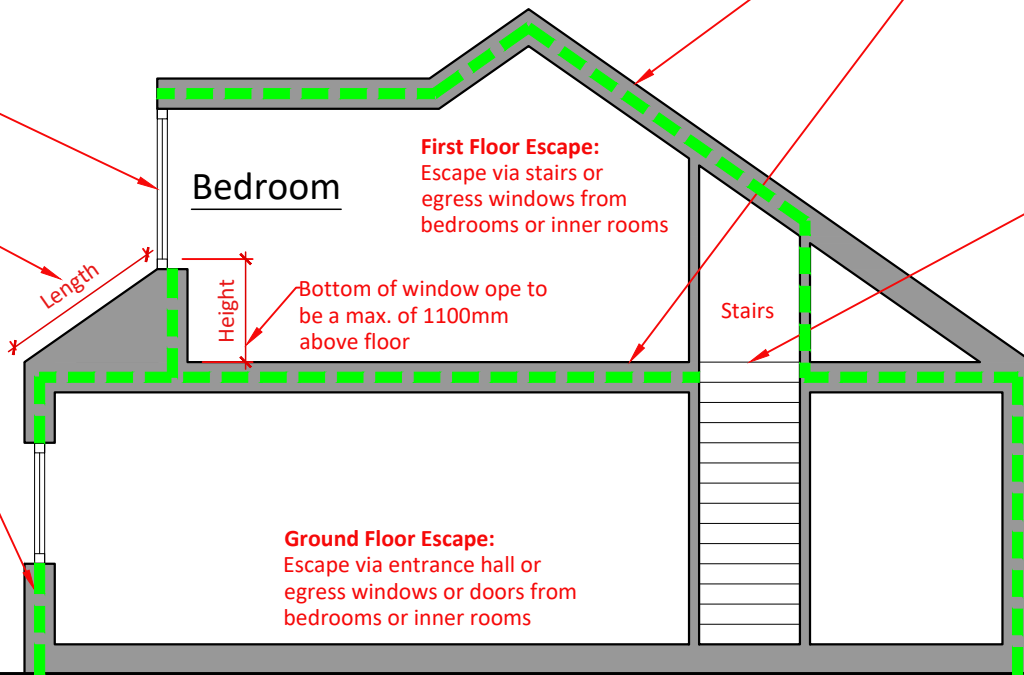
External Walls

(Table A1 TGD B Vol.2 2017):

<1m to Boundary: REI 30
≥1m to Boundary: RE 30, REI 15

Where external walls are timber frame - refer to: *Supplementary Guidance on Fire Resistance of Walls* (wall types achieve REI 30)

For RE30, REI15 fire resistance refer to Manufacturer's test data / Agrément certification



Truss:

Truss forms floor of dormer therefore it must achieve fire resistance. As per Table A1 - Item 3(a) TGD B Vol 2 2017, it should achieve RE30 REI15 (REI 30 if floor is over garage - including supporting structure)

Where truss requires fire resistance refer to *Supplementary Guidance on Fire Resistance of Trussed Roofs* (truss types achieve REI 30)

For RE30 REI15 rating refer to manufacturers test data or Agrément Certificates.

Stairs:

For stairs to dormer bungalow (2 storey) - 1st Floor ≤ 4.5m above ground level

The stairway should be enclosed with storey-height construction, which need not be fire resisting, and should discharge directly to the open air.

For open plan arrangements refer to Section 1.3.2.1 of TGD B Vol. 2 2017

Cavity Barriers

Refer to Bungalow House Type (Page 2) for information on location of cavity barriers

No floor more than 4.5m above ground level - Purpose Group 1(a)

House Type: Dormer Bungalow

Notes:

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Key Notes: (Tick off as addressed / complete)

- Final exits in accordance with Section 1.3.9.7 of TGD B Vol. 2 2017 (thumb-turn latch)
- Escape windows in accordance with Section 1.3.7 of TGD B Vol. 2 2017
- Fire detection and alarm system - LD2 or better in accordance with IS 3218
- Cavity barriers in accordance with Section 3.6.2 of TGD B Vol. 2 2017
- Fire resistance provisions in accordance with Appendix A of TGD B Vol.2 2017:
 - External walls
 - Upper floors (if applicable)
 - Roof truss (if applicable)
 - Elements supporting fire resistant construction (if applicable)

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- RE30 REI 15
(30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)
- REI 30
(30 minutes fire resistance load bearing capacity, integrity and insulation)



Truss:

No fire resistance required to truss if it only supports the roof, **unless** used as a means of escape or is essential for the stability of an external wall. (refer to Section 3.4.4 of TGD B Vol. 2 2017)

Where truss requires fire resistance refer to *Supplementary Guidance on Fire Resistance of Trussed Roofs* (truss types achieve REI 30)

Attic space not to be used for habitation, otherwise refer to *Dormer Two Storey* guidance

Window for escape or rescue:

Min. clear open area: 0.33m²
 Min. Height: 450mm
 Min. Width: 450mm

External Walls

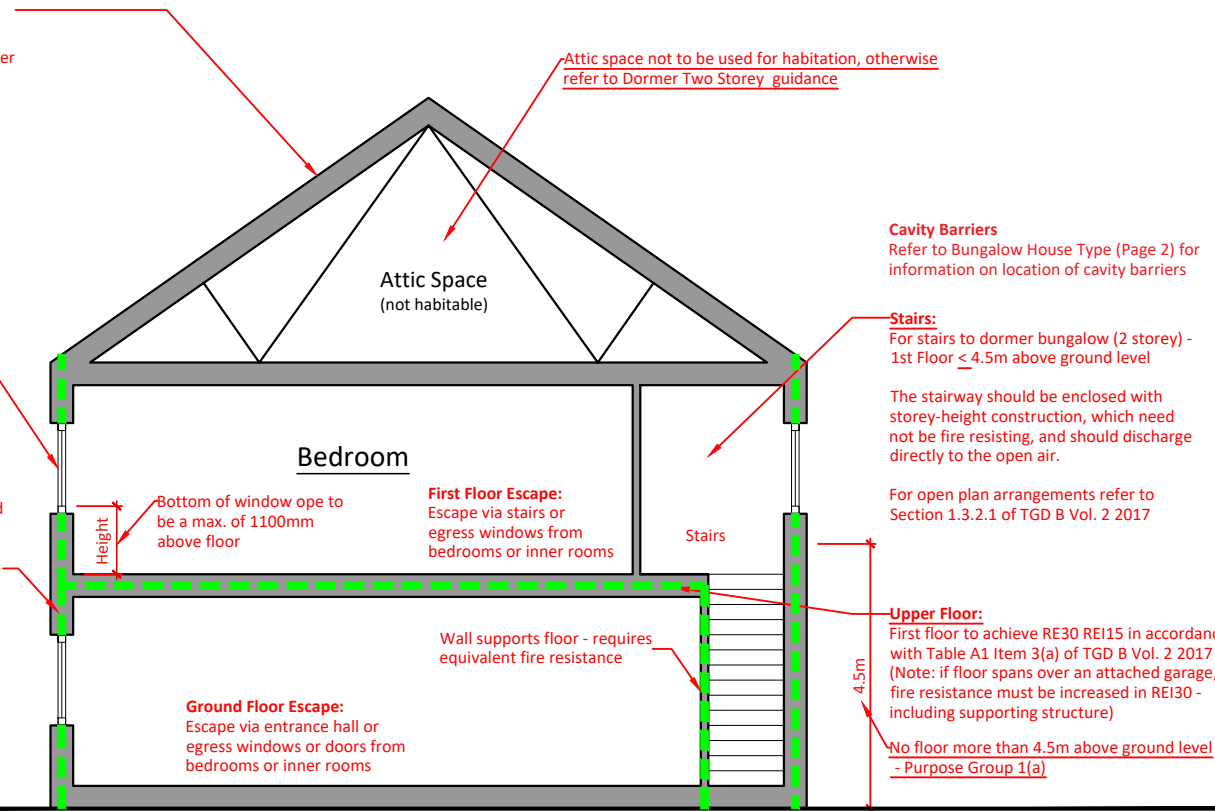
(Table A1 TGD B Vol.2 2017):

<1m to Boundary: REI 30
 ≥1m to Boundary: RE 30, REI 15

As the external walls will support the upper floors of the dwelling they should achieve a fire resistance rating of RE30 REI15

Where external walls are timber frame - refer to *Supplementary Guidance on Fire Resistance of Walls* (wall types achieve REI 30)

For RE30, REI15 fire resistance refer to Manufacturer's test data / Agrément certification



Cavity Barriers

Refer to *Bungalow House Type* (Page 2) for information on location of cavity barriers

Stairs:

For stairs to dormer bungalow (2 storey) - 1st Floor < 4.5m above ground level

The stairway should be enclosed with storey-height construction, which need not be fire resisting, and should discharge directly to the open air.

For open plan arrangements refer to Section 1.3.2.1 of TGD B Vol. 2 2017

Upper Floor:

First floor to achieve RE30 REI15 in accordance with Table A1 Item 3(a) of TGD B Vol. 2 2017 (Note: if floor spans over an attached garage, fire resistance must be increased in REI30 - including supporting structure)

No floor more than 4.5m above ground level - Purpose Group 1(a)

House Type: Two Storey

Notes:

The above guidance is not exhaustive, reference should be made to *Technical Guidance Document B (Fire Safety) Volume 2-Dwelling Houses 2017* and the *Supplementary Guidance to TGD B (Fire Safety) Volume 2 - Dwelling Houses 2017*, to ensure compliance with Part B of the Building Regulations.

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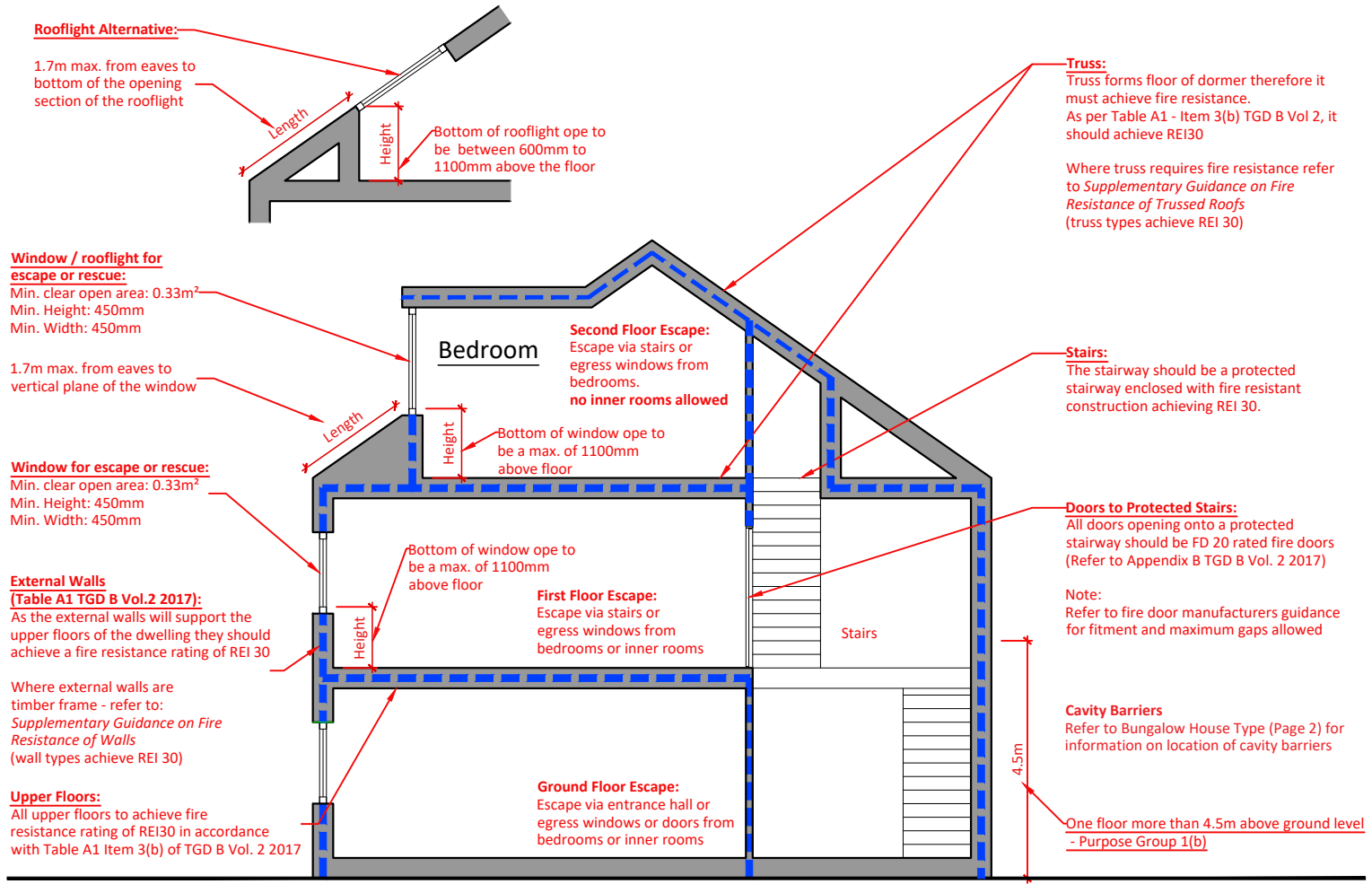
Key Notes: (Tick off as addressed / complete)

- Final exits in accordance with Section 1.3.9.7 of TGD B Vol. 2 2017 (thumb-turn latch)
- Escape windows in accordance with Section 1.3.7 of TGD B Vol. 2 2017
- Fire detection and alarm system - LD2 or better in accordance with IS 3218
- Cavity barriers in accordance with Section 3.6.2 of TGD B Vol. 2 2017
- Fire resistance provisions in accordance with Appendix A of TGD B Vol.2 2017:
 - External walls
 - Upper floors (if applicable)
 - Roof truss (if applicable)
 - Elements supporting fire resistant construction (if applicable)

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- RE30 REI 15
(30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)
- REI 30
(30 minutes fire resistance load bearing capacity, integrity and insulation)



House Type: Dormer Two Storey

Notes:
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- Final exits in accordance with Section 1.3.9.7 of TGD B Vol. 2 2017 (thumb-turn latch)
- Escape windows in accordance with Section 1.3.7 of TGD B Vol. 2 2017
- Fire detection and alarm system - LD2 or better in accordance with IS 3218
- Cavity barriers in accordance with Section 3.6.2 of TGD B Vol. 2 2017
- Fire resistance provisions in accordance with Appendix A of TGD B Vol.2 2017:
 - External walls
 - Upper floors (if applicable)
 - Roof truss (if applicable)
 - Elements supporting fire resistant construction (if applicable)

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- RE30 REI 15
(30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)
- REI 30
(30 minutes fire resistance load bearing capacity, integrity and insulation)



Attic space not to be used for habitation, otherwise refer to TGD B Vol 2 2017 for 4 Storey Dwelling Guidance

Truss:
 No fire resistance required to truss if it only supports the roof, unless used as a means of escape or is essential for the stability of an external wall. (refer to Section 3.4.4 of TGD B Vol. 2 2017)

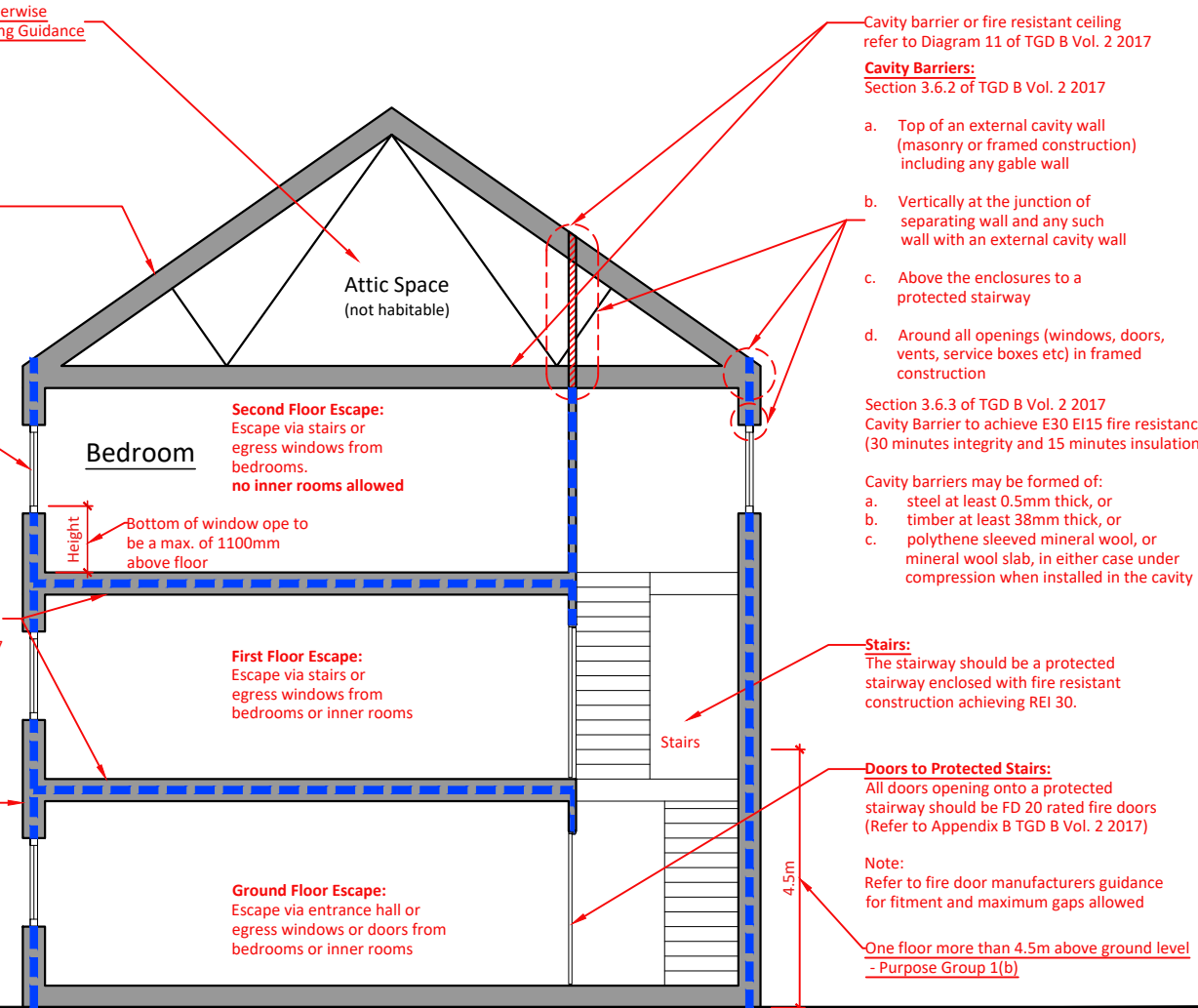
Where truss requires fire resistance refer to *Supplementary Guidance on Fire Resistance of Trussed Roofs* (truss types achieve REI 30)

Window for escape or rescue:
 Min. clear open area: 0.33m²
 Min. Height: 450mm
 Min. Width: 450mm

Upper Floors:
 All upper floors to achieve fire resistance rating of REI30 in accordance with Table A1 Item 3(b) of TGD B Vol. 2 2017

External Walls (Table A1 TGD B Vol.2 2017):
 As the external walls will support the upper floors of the dwelling they should achieve a fire resistance rating of REI 30

Where external walls are timber frame - refer to: *Supplementary Guidance on Fire Resistance of Walls* (wall types achieve REI 30)



Cavity barrier or fire resistant ceiling refer to Diagram 11 of TGD B Vol. 2 2017

Cavity Barriers:
 Section 3.6.2 of TGD B Vol. 2 2017

- a. Top of an external cavity wall (masonry or framed construction) including any gable wall
- b. Vertically at the junction of separating wall and any such wall with an external cavity wall
- c. Above the enclosures to a protected stairway
- d. Around all openings (windows, doors, vents, service boxes etc) in framed construction

Section 3.6.3 of TGD B Vol. 2 2017
 Cavity Barrier to achieve E30 EI15 fire resistance (30 minutes integrity and 15 minutes insulation)

- Cavity barriers may be formed of:
- a. steel at least 0.5mm thick, or
 - b. timber at least 38mm thick, or
 - c. polythene sleeved mineral wool, or mineral wool slab, in either case under compression when installed in the cavity

Stairs:
 The stairway should be a protected stairway enclosed with fire resistant construction achieving REI 30.

Doors to Protected Stairs:
 All doors opening onto a protected stairway should be FD 20 rated fire doors (Refer to Appendix B TGD B Vol. 2 2017)

Note:
 Refer to fire door manufacturers guidance for fitment and maximum gaps allowed

One floor more than 4.5m above ground level - Purpose Group 1(b)

House Type: Three Storey

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- Final exits in accordance with Section 1.3.9.7 of TGD B Vol. 2 2017 (thumb-turn latch)
- Escape windows in accordance with Section 1.3.7 of TGD B Vol. 2 2017
- Fire detection and alarm system - LD2 or better in accordance with IS 3218
- Cavity barriers in accordance with Section 3.6.2 of TGD B Vol. 2 2017
- Fire resistance provisions in accordance with Appendix A of TGD B Vol.2 2017:
 - External walls
 - Upper floors (if applicable)
 - Roof truss (if applicable)
 - Elements supporting fire resistant construction (if applicable)