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Fire assessment report

FyreSHIELD access panels in accordance with AS 1530.4:2014

Sponsor: Trafalgar Group

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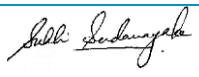
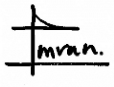
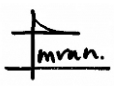
	Expiry: 31/08/2026	**Name**	Sukhi Sendanayake	Imran Ahamed	Imran Ahamed
		Signature			

Executive summary

This report documents the findings of the assessment undertaken to determine the expected fire resistance level (FRL) of Trafalgar FyreSHIELD access panels installed in various wall and floor separating elements – in accordance with AS 1530.4:2014 and AS 4072.1:2005.

The Trafalgar FyreSHIELD access panel consists of a panel leaf, FyreFrame and optionally, a Rakbak. The FyreFrame consists of polymeric composite with Gee Whiz intumescent backing for frame insulation. The hinged access panel has a door panel made of a Maxilite core with MDF on one face and fibre cement on the other. This is further cladded with Rakbak which incorporates a 20 mm deep steel back pan with 25 mm thick rockwool (density 80 kg/m³) sandwiched to rear of door panel. The screw-fixed access panel has a door panel made of a Maxilite core with MDF facings on both sides. The framing of the screw-fixed access panels is to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel covering the steel pan. An intumescent strip is installed behind the polymeric flange. The size of the FyreSHIELD access panels can vary up to 600 mm × 600 mm (or up to 740 mm × 740 mm in minimum 230 mm thick concrete / masonry walls) and can be installed in various wall and floor systems as assessed in this assessment report.

The analysis in sections 5 and 6 of this report found that the proposed systems – together with the described variations – are expected to achieve the fire resistance levels (FRL) shown in Table 1 in accordance with AS 1530.4:2014.

The variations and outcome of this assessment are subject to the limitations and requirements described in sections 2, 3 and 7 of this report. The results of this report are valid until 31 August 2026.

Table 1 Variations and assessment outcome

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 116 mm thick plasterboard wall system consisting of minimum 64 mm deep 0.5 BMT steel studs clad with two layers of 13 mm thick fire-rated plasterboard on both sides	Construction details to include: • Up to 600 mm × 600 mm FyreSHIELD access panels in all separating elements except concrete / masonry walls in which the size varies up to 740 mm × 740 mm • The optional local thickening of the Hebel and plasterboard wall systems using additional fire-rated plasterboard (other than that specified as applicable) so the frame does not protrude. • A bead of Trafalgar FyreFLEX™ sealant must be applied around the perimeter of the aperture and to the back of	• Up to 600 mm × 600 mm FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FRT180356 R2.0 FRT200160 R2.0	Minimum 96 mm thick plasterboard wall system consisting of minimum 64 mm deep 0.5 BMT steel studs clad with one layer of 16 mm thick fire-		• Up to 600 mm × 600 mm FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the	-/90/45 with Rakbak -/90/60 with Rakbak and additionally the aperture must be built locally with an additional layer of 13 mm extending at least	-/90/90 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
FRT200161 R1.0 FSP1307	rated plasterboard on both sides	the flange before inserting panel into the wall. • A 10 mm sealant fillet must be applied at the aperture between the wall and the FyreFrame. • Adding Gee Whiz intumescent strips to line the lock hole when Rakbak is not installed. • Adding Gee Whiz intumescent strips to the door seat. • FyreFrame incorporating 2 mm thick polymeric flange with Gee Whiz intumescent backing. • Openings in fire barriers up to 10 mm larger than frame size. • Hinged panels to consist of door panel of 30 mm Maxilite with MDF on one face and fibre cement on the other and optionally cladded with Rakbak incorporating 20 mm deep back pan with 25 mm thick rockwool (density 80 kg/m^3) sandwiched to rear of door panel • Screw-fixed panels to consist of door panel of 60 mm thick Maxilite core with MDF facings on both sides. There is no Rakbak. • The framing of the screw-fixed access panels to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel	aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	100 mm in all directions from the edge of the aperture on both sides. -/90/30 without Rakbak in both directions of fire exposure	
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 90 mm thick plasterboard wall system consisting of minimum 64 mm deep 0.5 BMT steel studs clad with one layer of 13 mm thick fire-rated plasterboard on both sides	• Up to 600 mm × 600 mm hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/60/45 with Rakbak -/60/60 with Rakbak and additionally the aperture must be built-up locally with an additional layer of 13 mm extending at least 100 mm in all directions from the edge of the aperture on both sides. -/60/30 without Rakbak in both directions of fire exposure	-/60/60 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 90 mm thick shaft wall consisting of minimum 64 mm deep steel studs cladded with two layers of 13 mm fire-rated plasterboard on the exposed side and a 25 mm fire-rated Shaftliner plasterboard on the unexposed side	• Up to 600 mm × 600 mm hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The aperture opening must be lined. Reinforcing trimmers must be provided across the studs to stabilise the opening as C-H studs do not have noggins on the shaft wall side. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
		covering the steel pan. An intumescent strip is installed behind the polymeric flange. • Optional wet wall application for polymeric flanges of access panels in plasterboard separating elements. • Apertures in framed walls (including the AlphaPanel wall configurations) must be lined with fire-rated plasterboard equal to the wall specifications. • The access panels must be secured to the separating element with the appropriate screw sizes at the given nominal centres. •	• Fire exposure from two directions.		
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 96 mm thick shaft wall consisting of minimum 64 mm deep steel studs cladded with two layers of 16 mm fire-rated plasterboard on the exposed side and a 25 mm fire-rated Shaftliner plasterboard on the unexposed side		• Up to 600 mm × 600 mm hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The aperture opening must be lined. Reinforcing trimmers must be provided across the studs to stabilise the opening as C-H studs do not have noggins on the shaft wall side. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure
FP6372 FRT190298 R1.0 FRT200160 R2.0 FRT200161 R1.0	Minimum 60 mm thick Pronto Panel™ wall		• Up to 600 mm wide × 600 mm high FyreSHIELD access panel – with local build up around the aperture with 13 mm thick fire-rated plasterboard layer extending 100 mm in all directions from the edge of the aperture (on the side of the panel leaf). • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm needle point screws at maximum nominal 170 mm centres.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• Fire exposure from two directions.		
FP6372 FRT190298 R1.0 FRT200160 R2.0 FRT200161 R1.0	Minimum 75 mm thick Hebel wall or AAC wall system (minimum density 650 kg/m^3)		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture (on the side of the panel leaf). • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm needle point screws at maximum nominal 170 mm centres. • Fire exposure from two directions.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure
FRT190298 R1.0 FRT200160 R2.0 FRT200161 R1.0	Minimum 78 mm thick Speedpanel wall		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture (on the side of the panel leaf). • The aperture must be capped with C-tracks. • The access panels must be secured to the wall at the aperture using 10g × 40 mm self-drilling screws at maximum nominal 200 mm centres. • The access panel must have a polymeric (or PVC) flange.	-/120/60 with Rakbak -/120/45 without Rakbak The access panel opening away from the furnace	-/120/120 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• The access panel opening away from the furnace.		
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture. • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 40 mm self-drilling screws at maximum nominal 200 mm centres. • The access panel opening towards the furnace	-/90/60 with Rakbak -/90/30 without Rakbak The access panel opening towards the furnace	
FRT200160 R2.0 FRT200161 R1.0 FSV2163 FRT180356 R2.0	Minimum 51 mm thick wall consisting of a 35 mm AlphaPanel cladded with one layer of 16 mm fire-rated plasterboard direct fixed to the AlphaPanel		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with two layers of 16 mm thick plasterboard layer extending 100 mm in all directions from the aperture. • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the AlphaPanel wall using 6 mm concrete/masonry screw at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
FRT200160 R2.0 FRT200161 R1.0 FSV2163 FRT180356 R2.0	Minimum 91 mm thick wall consisting of a 35 mm AlphaPanel with one layer of 16 mm fire-rated plasterboard fixed to furring channels connected to the AlphaPanel. The air cavity between the furring channels and the AlphaPanel is minimum 40 mm		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with a 16 mm thick plasterboard layer extending 100 mm in all directions from the aperture on the plasterboard face. • Local build up around the aperture with one layer of 16 mm thick plasterboard extending 100 mm in all directions from the aperture covering the flanges of the steel studs on the AlphaPanel face for 60 minutes insulation performance. • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure when the overlapping stud is covered with a strip of fire-rated plasterboard -/90/30 with or without Rakbak In both directions of fire exposure when the overlapping studs are not covered with plasterboard	-/90/90 with polymeric flange on both sides in both directions of fire exposure when the overlapping stud is covered with a strip of fire-rated plasterboard
FRT200160 R2.0 FRT200161 R1.0 FSV2163 FRT180356 R2.0	Two layers of minimum 35 mm thick AlphaPanels with an air gap, or optionally cavity insulation. Where the total wall thickness is less than 116 mm, fire-rated plasterboard extending minimum 100 mm from the edge of the aperture must be installed to		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with a 16 mm thick plasterboard layer extending 100 mm in all directions from the aperture on the plasterboard face. • The access panel must have a polymeric (or PVC) flange.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
	locally thicken the wall up to minimum 116 mm		• The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.		
FRT200160 R2.0 FRT200161 R1.0 FRT190298 R1.0 FSV2163 FRT180356 R2.0	Two layers of 15 mm thick A1 Corex fire-rated boards on one side of the steel framework.		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with three layers of 15 mm thick A1 Corex (or equivalent) extending 100 mm in all directions from the aperture on the board face. • The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated board. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/60/60 with Rakbak -/60/30 without Rakbak in both directions of fire exposure	-/60/60 with polymeric flange on both sides in both directions of fire exposure
	Two layers of 20 mm thick A1 Corex fire-rated boards on one side of the steel framework.		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with two layers of 20 mm thick A1 Corex (or equivalent) extending 100 mm in all directions from the aperture on the board face.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated board. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.		
	Two layers of 25 mm thick A1 Corex fire-rated boards on one side of the steel framework.		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with one layer of 25 mm thick A1 Corex (or equivalent) extending 100 mm in all directions from the aperture on the board face. • The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated board. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 116 mm thick concrete / masonry wall		• Up to 600 mm wide × 600 mm high hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the concrete / masonry wall with minimum	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			6 mm expanding masonry anchors at maximum nominal 200 mm centres. • Fire exposure from two directions.		
FSV2163 FSP1307	Minimum 230 mm thick concrete / masonry wall		• Up to 740 mm wide × 740 mm high screw-fixed FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the concrete / masonry wall with minimum 6 mm expanding masonry anchors at maximum nominal 200 mm centres. • Fire exposure from two directions.	-	-/120/120 with polymeric flange on both sides in both directions of fire exposure
TR-F48.01	Floor / ceiling system with three layers of 16 mm thick fire-rated plasterboard on the exposed side – suspended from timber joists with steel or timber grid system		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from below with access panel opening into the fire.	-/120/120 and RISF of 60 minutes with Rakbak	-/120/120 RISF of 60 minutes
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange	-/120/120 with Rakbak	-/120/120

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from above with access panel opening away from the fire.		
TR-F48.01 FSH0597	Floor / ceiling system with two layers of 16 mm thick fire-rated plasterboard on the exposed side – suspended from timber joists with steel or timber grid system		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using minimum 8 g × 65 mm needle point bugle head screws • Fire exposure from below with access panel opening into the fire.	-/60/60 and RISF of 60 minutes with Rakbak	-/60/60 RISF of 60 minutes
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from above with access panel opening away from the fire.	-/60/60 with Rakbak	-/60/60
TR-F48.01 FSH0597	Floor / ceiling system with two layers of 13 mm thick fire-rated plasterboard on		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak	-/60/60 and RISF of 45 minutes with Rakbak	-/60/60 RISF of 45 minutes

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
	the exposed side – suspended from timber joists with steel or timber grid system		• The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from below with access panel opening into the fire.		
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from above with access panel opening away from the fire.	-/60/60 with Rakbak	-/60/60

Note 1: For all assessed FyreSHIELD access panels, Lockwood LW Rim night-latch locks can be substituted instead of the Trafalgar FR Budget lock for the same assessed FRL.

Note 2: For all assessed systems, wet wall application where the polymeric flange of the access panel is plastered onto the separating element with plasterboard compound can be used as an option for the same assessed FRL.

Note 3: In access panels without the Rakbak, the keyhole must be lined with intumescent to eliminate the possibility of early integrity failure with flaming through the keyhole.

Note 4: For screw fixed panels, the assessed FRL apply to panels with either flanged edge polymeric frame or with perforated polymeric frame with wet wall application overlapping the separating element. There must be an additional polymeric flange, with intumescent strip backing, installed overlapping the steel pan on the rear of the panel as shown in Figure 11.

Note 5: All separating elements must be tested or assessed in accordance with AS 1530.4:2014 by an accredited testing laboratory to achieve an established FRL equivalent or greater than the FRL assessed for the access panels.

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1. Introduction

This report documents the findings of the assessment undertaken to determine the expected fire resistance level (FRL) of Trafalgar FyreSHIELD access panels installed in various wall and floor separating elements – in accordance with AS 1530.4:2014[1] and AS 4072.1:2005[2].

This report may be used as evidence of suitability in accordance with the requirements of the relevant National Construction Code (NCC) to support the use of the material, product, form of construction or design as given within the scope of this assessment report. It also references test evidence for meeting deemed to satisfy (DTS) provisions of the NCC that apply to the assessed systems.

This assessment was carried out at the request of Trafalgar Group. The sponsor details are included in Table 2.

Table 2 Sponsor details

Sponsor	Address
Trafalgar Group	26A Ferndell Street South Granville NSW 2142 Australia

2. Framework for the assessment

2.1 Assessment approach

An assessment is an opinion about the expected performance of a component or element of structure if it was subject to a fire test.

No specific framework, methodology, standard or guidance documents exists in Australia for doing these assessments. We have therefore followed the 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the Passive Fire Protection Forum (PFPF) in the UK in 2021[3].

This guide provides a framework for undertaking assessments in the absence of specific fire test results. Some areas where assessments may be offered are:

- Where a modification is made to a construction which has already been tested
- The interpolation or extrapolation of results of a series of fire resistance tests, or utilisation of a series of fire test results to evaluate a range of variables in a construction design or a product
- Where, for various reasons – eg size or configuration – it is not possible to subject a construction or a product to a fire test.

Assessments will vary from relatively simple judgements on small changes to a product or construction through to detailed and often complex engineering assessments of large or sophisticated constructions.

This assessment has been written in accordance with the general principles outlined in EN 15725:2010[4] for extended application reports on the fire performance of construction products and building elements.

This assessment uses established empirical methods and our experience of fire testing similar products to extend the scope of application by determining the limits for the design based on the

1 Standards Australia, 2014, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of construction, AS 1530.4:2014, Standards Australia, NSW.
2 Standards Australia, 2005, Components for the protection of openings in fire-resistant separating elements: Service penetrations and control joints (Reconfirmed 2016), AS 4072.1:2005 (R2016), Standards Australia, NSW.
3 Passive Fire Protection Forum (PFPF), 2021, Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, Passive Fire Protection Forum (PFPF), UK.
4 European Committee for Standardization, 2010, Extended application reports on the fire performance of construction products and building elements, EN 15725:2010, European Committee for Standardization, Brussels, Belgium.

tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance if the elements were to be tested in accordance with AS 1530.4:2014.

This assessment has been written using appropriate test evidence generated at accredited laboratories to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturer's stated design.

2.2 Compliance with the National Construction Code

This assessment report has been prepared to meet the evidence of suitability requirements of the NCC 2022[5] under A5G3 (1) (d). It references test evidence for meeting deemed to satisfy (DTS) provisions of the NCC under A5G5 for fire resistance level that apply to the assessed systems based on Specifications 1 and 2 for fire resistance for building elements.

This assessment report may also be used to demonstrate compliance with the requirements for evidence of suitability under the relevant sections of previous versions of the NCC.

2.3 Declaration

The 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the PFPF in the UK requires a declaration from the client. By accepting our fee proposal on 14 September 2022, Trafalgar Group confirmed that:

- To their knowledge the component or element of structure, which is the subject of this assessment, has not been subjected to a fire test to the standard against which this assessment is being made.
- They agree to withdraw this assessment from circulation if the component or element of structure is the subject of a fire test by a test authority in accordance with the standard against which this assessment is being made and the results are not in agreement with this assessment.
- They are not aware of any information that could adversely affect the conclusions of this assessment and – if they subsequently become aware of any such information – they agree to ask the assessing authority to withdraw the assessment.

3. Limitations of this assessment

- The scope of this report is limited to an assessment of the variations to the tested systems described in section 4.3.
- This report details the methods of construction, test conditions and assessed results that are expected if the systems were tested in accordance with AS 1530.4:2014.
- This assessment applies to floor/ceiling systems exposed to fire from below in accordance with the requirements of AS 1530.4:2014 or from above and to wall systems exposed to fire from each side in accordance with the requirements of AS 1530.4:2014 where vertical elements must be exposed to heat from the direction required to resist fire exposure.
- Apertures in framed walls (including the AlphaPanel wall configurations) must be lined with fire-rated plasterboard equal to the wall specifications.
- Screw types and spacing used to secure the access panels to the separating elements must be as specified in section 6 and Table 5.
- For ceiling systems with secondary framing consisting of timber battens – for 120 minutes of integrity and insulation and 60 minutes of RISF – the minimum size of the battens must be 70 mm × 35 mm and the total length of the plasterboard screws fixing the plasterboard layers to the timber battens must be minimum 80 mm. This screw length must be used for an area extending minimum 200 mm from the aperture in all directions. The aperture around the

[5] National Construction Code Volumes One and Two - Building Code of Australia 2022, Australian Building Codes Board, Australia

access panel must be capped with one layer of fire-rated plasterboard according to the ceiling specifications.

- All separating elements must be tested or assessed in accordance with AS 1530.4:2014 by an accredited testing laboratory to achieve an established FRL equivalent or greater than the FRL assessed for the access panels.
- This report is only valid for the assessed systems and must not be used for any other purpose. Any changes with respect to size, construction details, loads, stresses, edge or end conditions – other than those identified in this report – may invalidate the findings of this assessment. If there are changes to the system, a reassessment will need to be done by an Accredited Testing Laboratory (ATL).
- The documentation that forms the basis for this report is listed in Appendix A.
- This report has been prepared based on information provided by others. Warringtonfire has not verified the accuracy and/or completeness of that information and will not be responsible for any errors or omissions that may be incorporated into this report as a result.
- This assessment is based on the proposed systems being constructed under comprehensive quality control practices and following appropriate industry regulations and Australian Standards on quality of materials, design of structures, guidance on workmanship and the expert handling, placing and finishing of the products on site. These variables are beyond the control and consideration of this report.

4. Description of the specimen and variations

4.1 Description of assessed systems

The Trafalgar FyreSHIELD access panel consists of a panel leaf, FyreFrame and optionally, a Rakbak.

The hinged access panel consists of a door panel made of a Maxilite core with MDF on one face and fibre cement on the other. This is further cladded with Rakbak which incorporates a 20 mm deep steel back pan with 25 mm thick rockwool (density 80 kg/m³) sandwiched to rear of door panel.

The screw-fixed access panel consists of a door panel made of a Maxilite core with MDF facings on both sides. The framing of the screw-fixed access panels is to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel covering the steel pan. An intumescent strip is installed behind the polymeric flange as shown in Figure 11.

The FyreFrame consists of polymeric composite with Gee Whiz intumescent backing for frame insulation.

The size of the FyreSHIELD access panels can vary up to 600 mm × 600 mm (or up to 740 mm × 740 mm in minimum 230 mm thick concrete / masonry walls) and can be installed in various wall and floor systems as discussed in section 6 of this assessment report.

4.2 Referenced test data

The assessment of the variations to the tested systems and the determination of the expected performance is based on the results of the fire tests documented in the reports summarised in Table 3. Further details of the tested systems are included in Appendix B.

Table 3 Referenced test data

Report number	Test sponsor	Test date	Testing authority
FSH0597	Boral Plasterboard	25 June 1998	CSIRO
FSP1307	F&S Group Pty Ltd T/A Fire Containment	2 May 2008	CSIRO
FR3982	Abesco Limited	17 June 2008	BRANZ
FP6372	Fire Containment Pty Ltd	3 July 2018	BRANZ
FRT180356	Trafalgar Fire	2 October 2018	Exova Warringtonfire Aus Pty Ltd
FRT190298	Trafalgar Fire	23 January 2020	Warringtonfire Australia Pty Ltd
FRT200160	Trafalgar Fire	19 May 2020	Warringtonfire Australia Pty Ltd
FRT200161	Trafalgar Fire	20 May 2020	Warringtonfire Australia Pty Ltd
TR-F48.01	Trafalgar Fire Containment Solutions Pty Ltd	3 November 2020	Resolute Testing Laboratories
FSV2163	Trafalgar Group Pty Ltd	8 December 2020	CSIRO

4.3 Variations to the tested systems

The tested systems and variations to those tested systems – together with the referenced standard fire tests – are described in Table 4.

Table 4 Variations to tested systems

Item	Reference tests	Description	Variations
Hinged or screw-fixed FyreSHIELD access panel	FSP1307 FSH0597 FR3982	These tests have been conducted in accordance with AS 1530.4:1997[6] or AS 1530.4:2005[7].	Assess applicability of test results in accordance with AS 1530.4:2014.
	FRT200160 R2.0 FRT200161 R1.0 FP6372 FRT190298 R1.0 FRT180356 R2.0 FSV2163 FSP1307 TR-F48.01 FSH0597	In test report FRT200160, the tested assembly consisted of a 1600 mm × 1600 mm × 60 mm Pronto Panel™ penetrated by 10 penetration systems and one access panel. Specimen K consisted of a 600 mm wide × 600 mm high Trafalgar FRC+ access panel – opening into the furnace. In FRT200161, the construction was similar to FRT200160 with the main difference being the orientation of the access panel with the panel leaf opening away from the furnace. In test report FP6372, the tested assembly consisted of a nominal 460 mm × 460 mm opening cut through the 75 mm thick Hebel PowerPanel wall. The opening was lined around all the four sides on the exposed side with 75 mm × 50 mm × 1.2 mm slotted angle, fixed in place with 8g × 65 mm CSK plasterboard screws. The access panel was fitted from the unexposed side and held in position with 8g × 100 mm plasterboard screws. In test report FRT190298, the tested assembly consisted of a 78 mm thick Speedpanel wall system penetrated by two penetration systems and an access panel. The wall system was further thickened by one layer of 13 mm fire-rated plasterboard installed around the aperture at the unexposed side. The access panel was of an overall size of 585 mm wide × 585 mm high × 39 mm thick and opened away from the furnace. In test report FRT180356.2, the tested assembly consisted of 1595 mm wide × 1595 mm long × 116 mm thick fire-rated	It is proposed to apply construction details from FRT200160 and FRT200161 access panels to other fire separating elements. Separating elements shall include: • Minimum 116 mm thick plasterboard wall system • Minimum 96 mm thick plasterboard wall or shaft wall system • Minimum 90 mm thick plasterboard or shaft wall system • Minimum 60 mm thick Pronto Panel™ wall • Minimum 75 mm thick Hebel or Autoclaved Aerated Concrete (AAC) wall • Minimum 78 mm thick Speedpanel wall • Minimum 51 mm thick wall consisting of a 35 mm AlphaPanel cladded with one layer of 16 mm fire-rated plasterboard directly fixed to the AlphaPanel • Minimum 91 mm thick wall consisting of a 35 mm AlphaPanel with one layer of 16 mm fire-rated plasterboard fixed to furring channels connected to the AlphaPanel. The air cavity between the furring channels and the AlphaPanel is minimum 40 mm. Minimum 76 mm steel studs to be installed on either side of the aperture to improve rigidity at the interface between the wall and the access panel.

[6] Standards Australia, 1997, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of building construction, AS 1530.4:1997, Standards Australia, NSW.
[7] Standards Australia, 2005, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of construction, AS 1530.4:2005, Standards Australia, NSW.

Item	Reference tests	Description	Variations
		plasterboard wall system penetrated by two access panels, opening away from the furnace. The wall system consisted of 64 mm 0.5 BMT steel framing system with two layers of 13 mm fire-rated plasterboard on both the exposed and unexposed side. Specimen A consisted of a Trafalgar FRC+ access panel with a plastic flange design. This did not contain a Rakbak with rockwool filling. The aperture size for the access panel was 410 mm wide × 410 mm high. In test report FSV2163, the tested assembly consisted of a 3000 mm wide × 2770 mm high × 116 mm thick plasterboard with four access panels, two service penetrations and two wall system perimeter joints. The wall system consisted of 64 mm 0.5 BMT steel framing system with two layers of 13 mm fire-rated plasterboard on both the exposed and unexposed side. Specimens 1-4 were FyreSHIELD PLUS fire-rated access panels. In test FSP1307, the tested access panel measured nominally 740 mm high × 740 mm wide × 68 mm thick and installed in a 1150 mm × 1150 mm × 230 mm masonry wall. The access panel was fabricated using a 60 mm thick Maxilite board core faced with 4 mm thick MDF board. The MDF face sheeting was fixed to the Maxilite core using a contact adhesive. In test report TR-F48.01, the tested Trafalgar FyreSHIELD PLUS access panel (specimen A) measured 600 mm × 600 mm, penetrating a suspended floor / ceiling system measuring 1600 mm × 1600 mm × 352 mm. It was installed into the ceiling using 8 g × 65 mm needle point bugle head screws through each side of the frame of the hatch into the furring channel on two sides and the top cross rails on the other two sides. The ceiling system consisted of three layers of 16 mm Knauf FireShield with offset joints by 400 mm on each layer. Test report FSH0597 details a test conducted on a loadbearing floor / ceiling system consisting of timber floor frame and suspended plasterboard ceiling. A common upper layer of 13 mm thick fire-rated plasterboard was fixed to the furring channels. The lower layers of 13 mm or 16 mm thick fire-rated plasterboard were screwed to the upper layer of plasterboard.	• 2 × 35 mm AlphaPanel walls with an air gap or optionally, cavity insulation in between. If the overall wall thickness is less than 116 mm (ie if the air gap is less than 46 mm), the aperture must be locally thickened with fire-rated plasterboard to bring the wall thickness to minimum 116 mm. • Two layers of 15 mm thick, or 20 mm thick or 25 mm thick A1 Corex fire-rated boards on one side of the steel framework. The aperture must be built up with A1 Corex (or equivalent) extending minimum 100 mm from the edge of the aperture in all direction to bring the total local thickness to minimum 75 mm. The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated boards. • Minimum 116 mm thick concrete / masonry wall • Floor / ceiling system with three layers of 16 mm thick plasterboard on one side – suspended from timber joists with steel or timber grid system • Floor / ceiling system with two layers of 16 mm thick plasterboard on one side – suspended from timber joists with steel or timber grid system Construction details to include: • Up to 600 mm × 600 mm hinged or screw-fixed FyreSHIELD access panels in all separating elements. The size to be increased to 740 mm × 740 mm in minimum 230 mm thick concrete / masonry walls. • Separating elements to be locally thickened around the aperture with fire-rated plasterboard extending minimum 100 mm in all directions from the aperture, as applicable. The optional local thickening of the Hebel and plasterboard wall systems using additional fire-rated plasterboard, so the frame does not protrude. • For screw-fixed access panels in AlphaPanel walls, an additional local build-up of one layer of minimum

Item	Reference tests	Description	Variations
			16 mm thick fire-rated plasterboard must be installed on the AlphaPanel face, along the full-height covering the exposed flanges of the steel studs on either side of the aperture. The plasterboard strip must be minimum 200 mm wide. • A bead of Trafalgar FyreFLEX™ sealant must be applied around the perimeter of the aperture and to the back of the flange before inserting panel into the wall. A sealant fillet must be added to the rear frame at the aperture. • Optionally adding Gee Whiz intumescent strips to line the lock hole. • Adding Gee Whiz intumescent strips to the door seat. • FyreFrame incorporating 2 mm thick polymeric flange with Gee Whiz intumescent backing. • Openings in fire barriers up to 10 mm larger than frame size. • Door panel of hinged access panel consists of a 30 mm thick Maxilite core with MDF on one face and fibre cement on the other and optionally cladded with Rakbak incorporating 20 mm deep back pan with 25 mm thick rockwool (density 80 kg/m^3) sandwiched to rear of door panel. • Door panel of screw-fixed access panel consists of a 60 mm thick Maxilite core with MDF facings on both sides • The framing of the screw-fixed access panels to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel covering the steel pan. An intumescent strip is installed behind the polymeric flange as shown in Figure 11.
	FSV2163	In test report FSV2163, the tested access panels consisted of an externally profiled galvanised steel frame with a polymeric flange. The polymeric flange measuring 41 mm × 25 mm × 2 mm thick had a perforated edged face to form a set bead (wet wall) to be plastered into place.	Optional wet wall application for polymeric flanges of access panels in plasterboard separating elements.

Item	Reference tests	Description	Variations
		The polymeric flange was located on the unexposed face of the plasterboard wall extending 25 mm over the wall and set with Gyprock plasterboard compound.	
	FR3982	In FR3982, the tested access panel (specimen B) had a Lockwood LW Rim night-latch lock installed on the exposed face of the panel with the Escutcheon fitted to the unexposed face through a 32 mm diameter hole through the panel. The latch plate was formed by a slot cut in the adjacent frame stop. The test specimen achieved -/120/60.	Using Lockwood LW Rim night-latch lock for access panel hardware

4.4 Schedule of components

Table 5 outlines the schedule of components for the assessed systems subject to a fire test, as referenced in Appendix B.

Table 5 Schedule of components of assessed systems

Item	Description	
Separating elements		
1.	Product name	Minimum 116 mm thick flexible wall system
	Product specification	The wall system must consist of minimum two layers of 13 mm fire-rated plasterboard fixed onto both sides of minimum 64 mm deep steel framing. Aperture must be lined with two layers of fire-rated plasterboard. Construction of the wall system must be similar to that of FRT180356.
2.	Product name	Minimum 96 mm thick flexible wall system
	Product specification	The wall system must consist of one layer of 16 mm fire-rated plasterboard fixed onto both sides of the 64 mm deep steel framing. Aperture must be lined with one layer of fire-rated plasterboard. Construction of the wall system must be similar to that of FRT180356.
3.	Product name	Minimum 90 mm thick flexible wall system
	Product specification	The wall system must consist of one layer of 13 mm fire-rated plasterboard fixed onto both sides of the 64 mm deep steel framing. Aperture must be lined with one layer of fire-rated plasterboard. Construction of the wall system must be similar to that of FRT180356.
4.	Product name	Minimum 90 mm or 96 mm thick shaft wall
	Product specification	The wall system must consist of minimum 64 mm steel C-H stud cladded with two layers of 13 mm or 16 mm thick fire-rated plasterboard on the exposed side and a 25 mm thick fire-rated shaftliner panel on the unexposed side.
5.	Product name	Minimum 60 mm thick Pronto Panel™
	Product specification	The panel must consist of 50 mm thick normal weight concrete – cement and EPS – sandwiched between two layers of 4.75 mm thick cement board. Construction of the wall system must be similar to FRT200160 and FRT200161.
6.	Product name	Minimum 75 mm thick Hebel panel
	Product specification	The panel must consist of minimum 75 mm thick Hebel PowerPanel. Construction of the wall system must be similar to that of FP6372.
7.	Product name	78 mm thick Speedpanel
	Product specification	78 mm concrete core encased in a 0.4 mm thick (nominal) galvanised ribbed profile mild steel skin. The panels incorporated a tongue and groove joint. Construction of the wall system must be similar to that of FRT190298.
8.	Product name	AlphaPanel and plasterboard wall system
	Product specification	• Configuration 1: 1 × 35 mm AlphaPanel wall with 1 × 16 mm plasterboard cladding directly fixed to the AlphaPanel and locally thickened with 2 × 16 mm fire-rated plasterboard extending minimum 100 mm from the aperture in all directions (minimum 83 mm overall thickness) • Configuration 2: 1 × 35 mm AlphaPanel wall with 1 × 16 mm fire-rated plasterboard fixed to furring channels connected to the AlphaPanel. The air cavity between the furring channels and the AlphaPanel is minimum 40 mm. – For hinged access panels, the wall system must be built up with one layer of 16 mm thick fire-rated plasterboard on the plasterboard face extending minimum 100 mm in all directions from the aperture (minimum 107 mm overall thickness) – For screw-fixed access panels, the wall system must be built up with one layer of 16 mm thick fire-rated plasterboard on the plasterboard face extending minimum 100 mm in all directions from the aperture.

Item	Description	
		Additionally, a local build-up of one layer of 16 mm thick fire-rated plasterboard must be installed over the flanges of the steel stud that overlap with the AlphaPanel (minimum 123 mm overall thickness). • Configuration 3: 2 × 35 mm AlphaPanel walls with an air gap or optionally, cavity insulation in between. If the overall wall thickness is less than 116 mm (ie if the air gap is less than 46 mm), the aperture must be locally thickened with fire-rated plasterboard to bring the wall thickness to minimum 116 mm. For all AlphaPanel wall configurations, the aperture must be built-up one layer of 16 mm thick fire-rated plasterboard.
9.	Product name	A1 Corex shaft wall system
	Product specification	• Configuration 1: Two layers of 15 mm thick A1 Corex fire-rated boards on one side of the steel framework. The aperture must be built up with three layers of 15 mm thick A1 Corex (or equivalent) extending minimum 100 mm from the edge of the aperture in all direction to bring the total local thickness to 75 mm. • Configuration 2: Two layers of 20 mm thick A1 Corex fire-rated boards on one side of the steel framework. The aperture must be built up with two layers of 20 mm thick A1 Corex (or equivalent) extending minimum 100 mm from the edge of the aperture in all direction to bring the total local thickness to 80 mm. • Configuration 3: Two layers of 25 mm thick A1 Corex fire-rated boards on one side of the steel framework. The aperture must be built up with one layer of 25 mm thick A1 Corex (or equivalent) extending minimum 100 mm from the edge of the aperture in all direction to bring the total local thickness to 75 mm. The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated board.
10.	Product name	Minimum 116 mm thick concrete / masonry wall system
	Product specification	Construction of the wall system must be similar to that of FSP1307.
11.	Product name	Floor / ceiling system with 3 × 16 mm thick plasterboard layers
	Product specification	The ceiling system must consist of minimum three layers of 16 mm fire-rated plasterboard fixed onto the exposed side of the floor / ceiling system. Aperture must be lined with three layers of fire-rated plasterboard. Construction of the wall system must be similar to that of TR-F48.01.
12.	Product name	Floor / ceiling system with 2 × 16 mm thick plasterboard layers
	Product specification	The ceiling system must consist of minimum two layers of 16 mm fire-rated plasterboard fixed onto the exposed side of the floor / ceiling system. Aperture must be lined with two layers of fire-rated plasterboard. Construction of the wall system must be similar to that of TR-F48.01 and FSH0597.
13.	Product name	Floor / ceiling system with 2 × 13 mm thick plasterboard layers
	Product specification	The ceiling system must consist of minimum two layers of 13 mm fire-rated plasterboard fixed onto the exposed side of the floor / ceiling system. Aperture must be lined with two layers of fire-rated plasterboard. Construction of the wall system must be similar to that of TR-F48.01 and FSH0597.
Access panel		
Access panel leaf		
14.	Item name	Panel leaf
	Product name	FRC+
14a.	Item name	Panel core
	Product description	Maxilite board
	Core thickness	30 mm for hinged panels and 60 mm for screw-fixed panels (nominal)

Item	Description	
	Density	295.8 kg/m^3
14b.	Item name	Gee Whiz intumescent strips
	Size	16 mm wide × 1.8 mm thick (nominal)
	Density	1100 to 1300 kg/m^3 (provided by manufacturer)
14c.	Product description	Medium density fibreboard (MDF)
	Density	872.6 kg/m^3
	Size	Minimum 4 mm thickness
14d.	Product description	Fibre cement board
	Size	Minimum 4.5 mm thickness
	Density	1347 kg/m^3
14e.	Item name	Steel back pan
	Product description	0.5 mm thick galvanised steel (provided by report sponsor)
14f.	Item name	Mineral wool infill
	Product description	Rockwool infill with nominal density 80 kg/m^3 (provided by report sponsor)
Access panel leaf	Specification	The panel leaf consisting of the panel core sandwiched between the MDF and fibre cement board for hinged panels and between MDF facings for screw-fixed panels. Gee Whiz intumescent strips were fitted around the perimeter of the panel leaf.
Access panel frame		
15.	Item name	Access panel frame
	Material	Galvanised mild steel
	Thickness	1.1 mm (nominal)
	Size	450 mm × 450 mm access panel 600 mm × 600 mm access panel 740 mm × 740 mm access panel
	Specification	The frame was folded and welded together at each corner.
16.	Item name	Access panel flange equal angle
	Material	Polymeric
	Size	41 mm × 25 mm × 2 mm thick (provided by report sponsor)
	Specification	The equal angle fixed to the front of the frame with 3.9 mm steel rivets located at nominal 240 mm centres to provide for a flange. The framing of the screw-fixed access panels to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel covering the steel pan. An intumescent strip must be installed behind the polymeric flange as shown in Figure 11.
Access panel hardware		
17.	Item name	Hinge
	Product name	Trafalgar FR hinge set
	Material	All-steel
	Installation	The hinges were installed at nominal 100 mm, 300 mm, and 500 mm from the bottom of the panel leaf to the centre of the hinge. Nominal 5 mm gaps were cut out around the back pan and mineral wool infill.
18.	Item name	Lockset
	Product name	Trafalgar FR budget lock or Lockwood LW Rim night-latch lock
	Size	85 mm long × 25 mm wide (nominal)

Item	Description	
	Material	Galvanised mild steel
	Back set	35 mm
	Installation	Fixed to the latch side vertical edge of the panel leaf at mid-height on the exposed side, with the latch engaged into a slot in the frame.
19.	Item name	Steel bezel
	Size	Ø15 mm × 12 mm deep (nominal)
	Material	Mild steel
	Installation	Fixed on the exposed side of the panel leaf at the mid height of the latch side edge. The steel bezel was lined with a 1.8 mm thick Gee Whiz intumescent strip.
Fixings		
20.	Item name	L angle fixing
	Product description	13g × 50 mm long type z hex head screw
	Installation	Used to secure the panels to the L angle whenever required
21.	Item name	Rakbak fixing
	Product description	8g × 45 mm long bugle head needle point screw
	Installation	Used to secure the steel back pan sandwiching the mineral wool infill to the unexposed door skin.
22.	Item name	Securing the access panel frame to the separating element
	Product description	• Plasterboard wall systems: 10g × 100 mm plasterboard screws at nominal 150 mm centres • Plasterboard Shaftwall systems: 10g × 100 mm plasterboard screws at nominal 150 mm centres • Pronto Panel™ walls: 10g × 100 mm needle point at nominal 170 mm centres • Hebel wall or AAC wall: 10g × 100 mm needle point screws at maximum nominal 170 mm centres. • Speedpanel wall: 10g × 40 mm self-drilling screws at maximum nominal 200 mm centres • AlphaPanel wall configuration 1: 6 mm concrete/masonry screw at maximum nominal 150 mm centres • AlphaPanel wall configuration 2 and 3: 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres • A1 Corex shaft wall configuration 1 to 3: 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres • Concrete / masonry wall: 6 mm expanding masonry anchors at nominal maximum 200 mm centres • Floor / ceiling systems: 8 g × 65 mm needle point bugle head screws through each side of the frame of the hatch into the furring channel on two sides and the top cross rails on the other two sides
Access panel		
23.	Item	Access panel
	Aperture size	460 mm wide × 460 mm high
		605 mm wide × 605 mm high
		750 mm wide × 750 mm high
	Installation	100 mm wide strips of plasterboard to be installed on the separating element, lining the aperture to thicken the wall system. This is optional for

Item	Description	
		plasterboard wall systems. The plasterboard must be secured to the separating element with 6g × 32 mm long plasterboard screws. The access panel must be then installed into the aperture depending on the required orientation. Trafalgar FyreFLEX™ sealant must be applied on the unexposed side in the annular gap between the access panel frame and the panel to a nominal depth of 10 mm and finishing with a 10 mm fillet between the rear frame and the aperture. A bead of acrylic sealant must be applied between the interface of the access panel flange angle and the separating element.

Figure 1 to Figure 11 show some of the assessed systems.

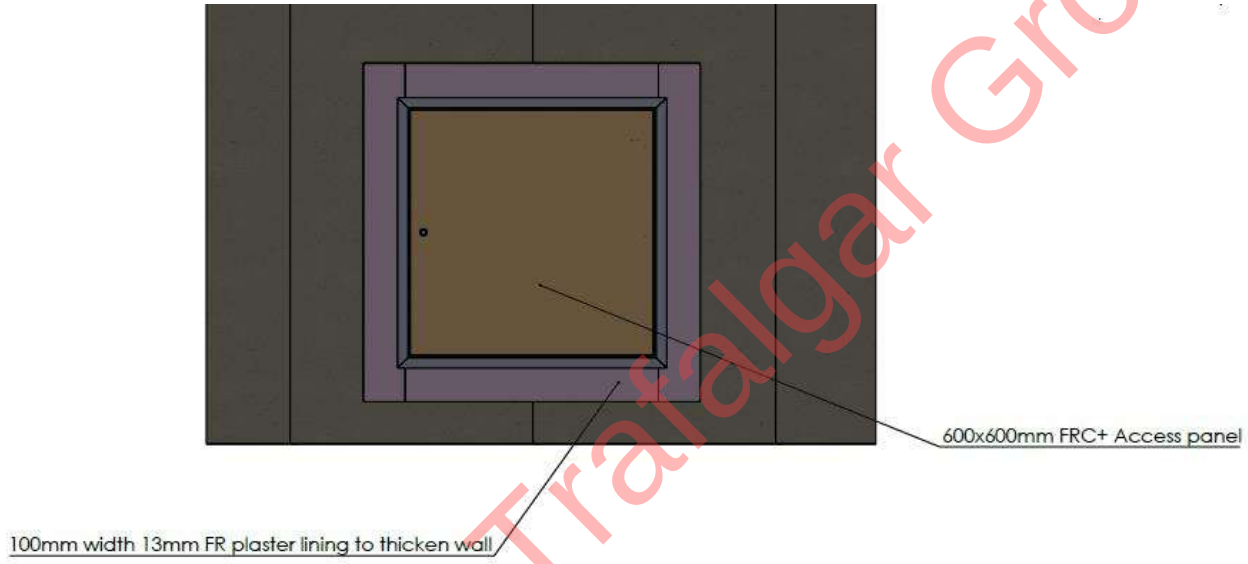

Figure 1 General layout of FyreSHIELD access panel (indicative)

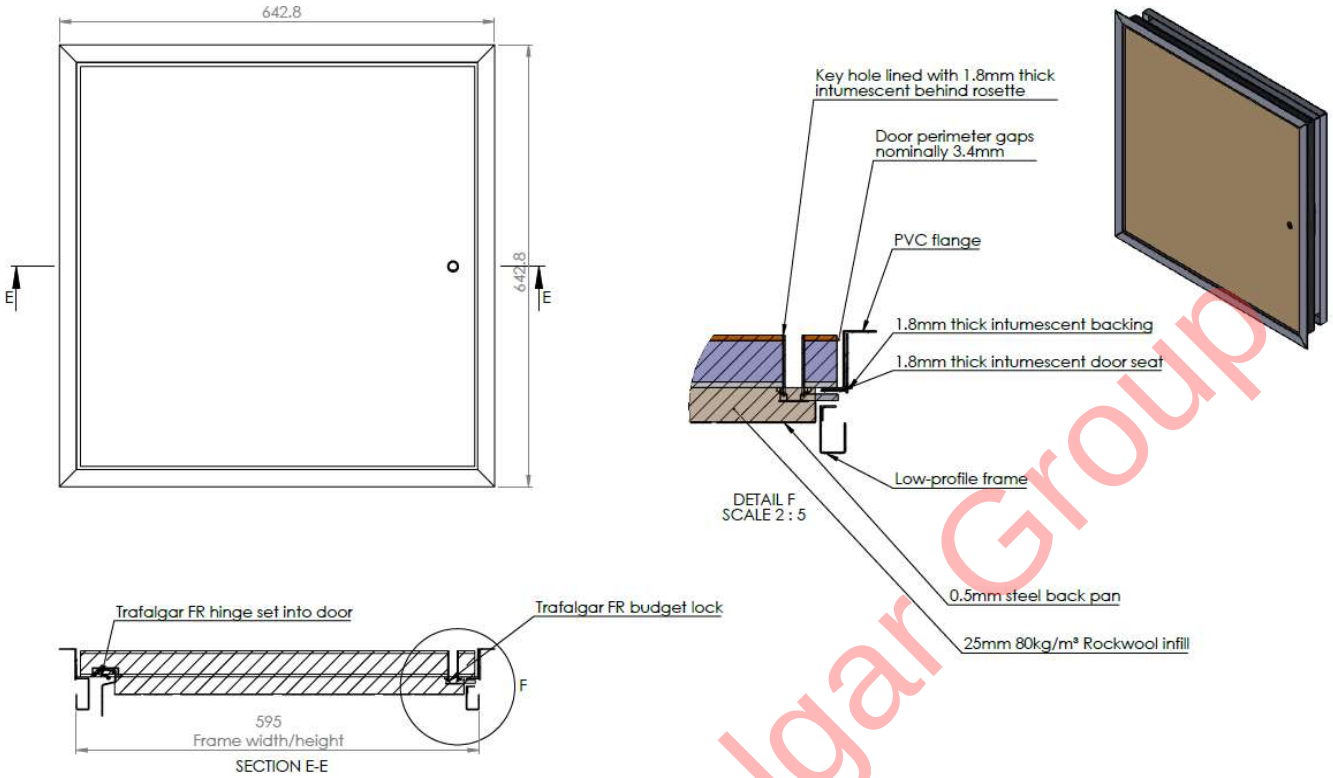

Figure 2 FRC+ specifications (indicative)

Figure 3 FRC+ hardware locations (indicative)

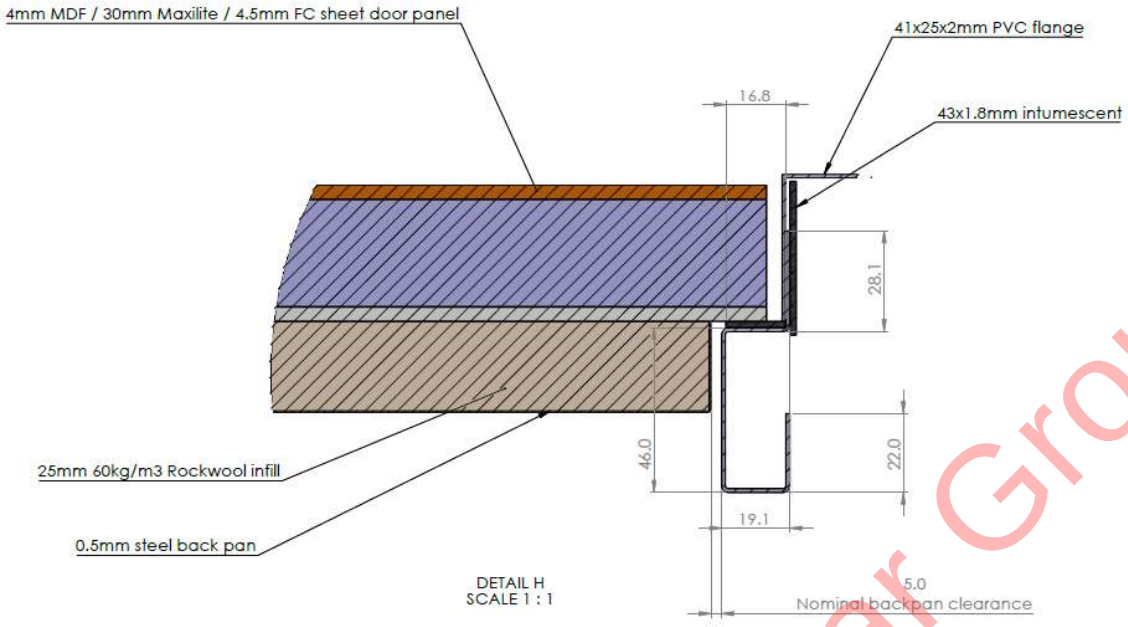

Figure 4 FRC+ frame dimensions (indicative)

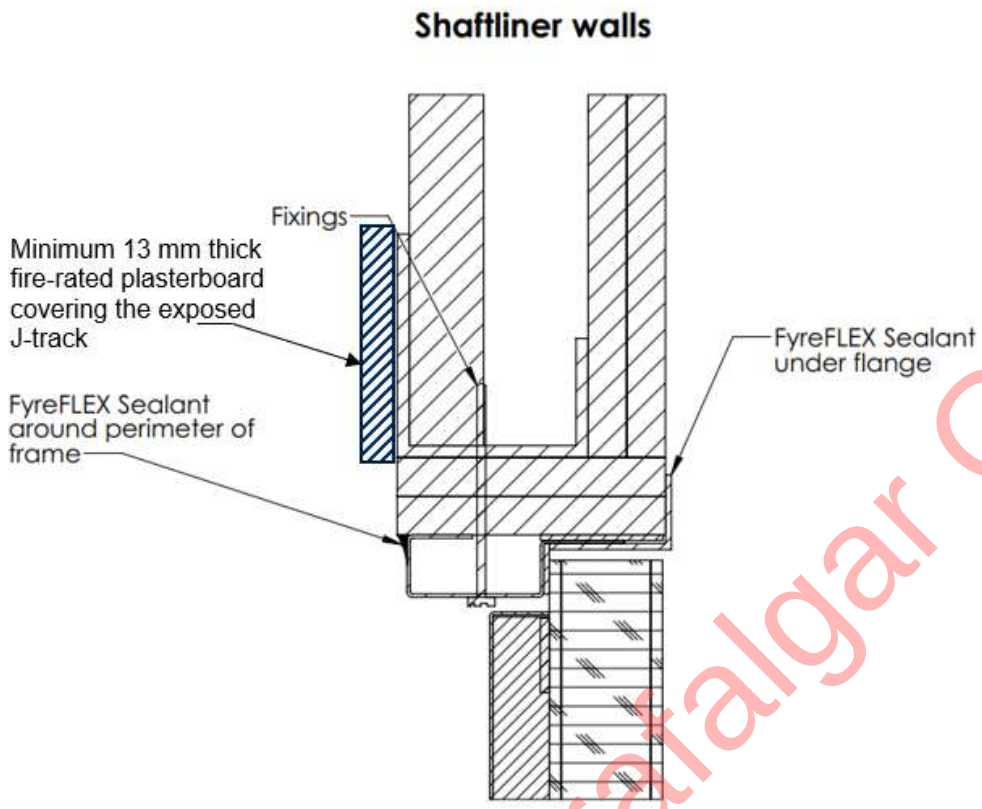

Figure 5 **Installation of FyreSHIELD access panels in shaft walls**

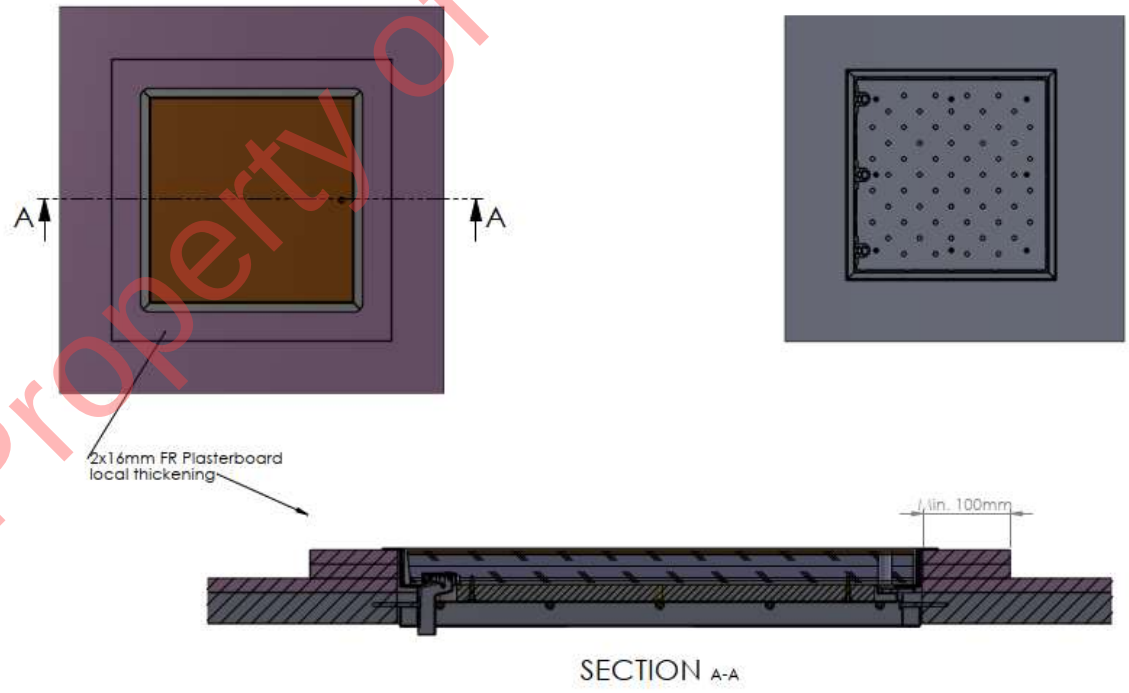

Figure 6 **FyreSHIELD access panel in AlphaPanel + plasterboard wall system (minimum overall thickness 83 mm) – Configuration 1**

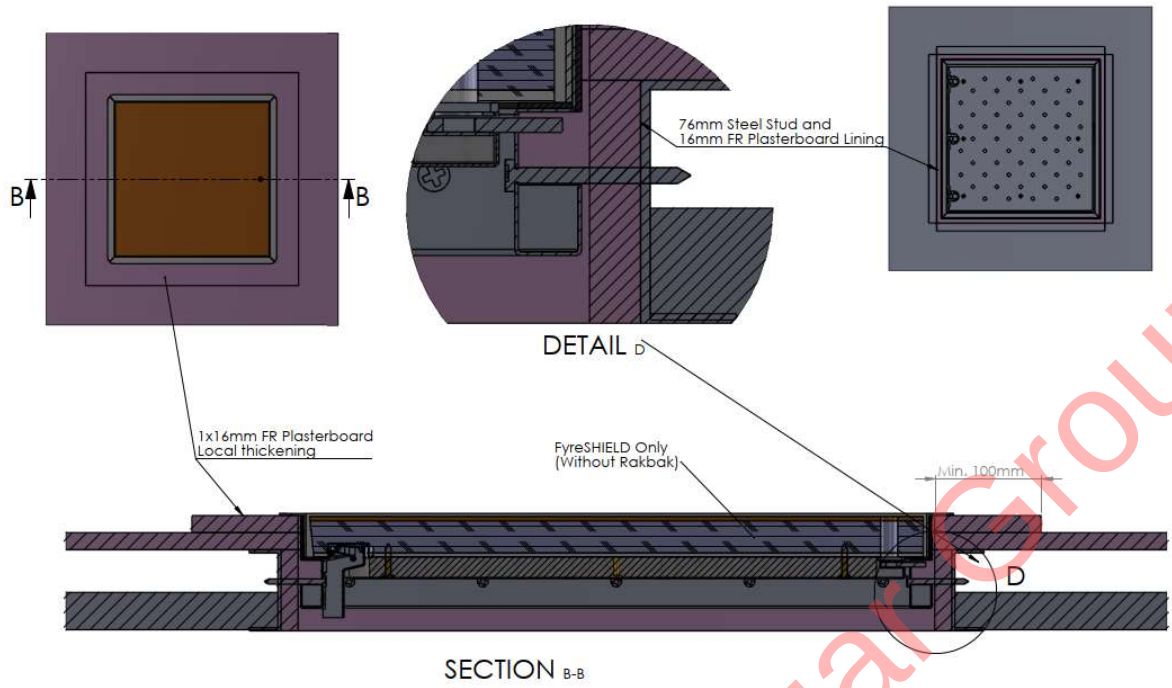

Figure 7 Hinged FyreSHIELD access panel in AlphaPanel + plasterboard wall system (minimum overall thickness of 123 mm– Configuration 2

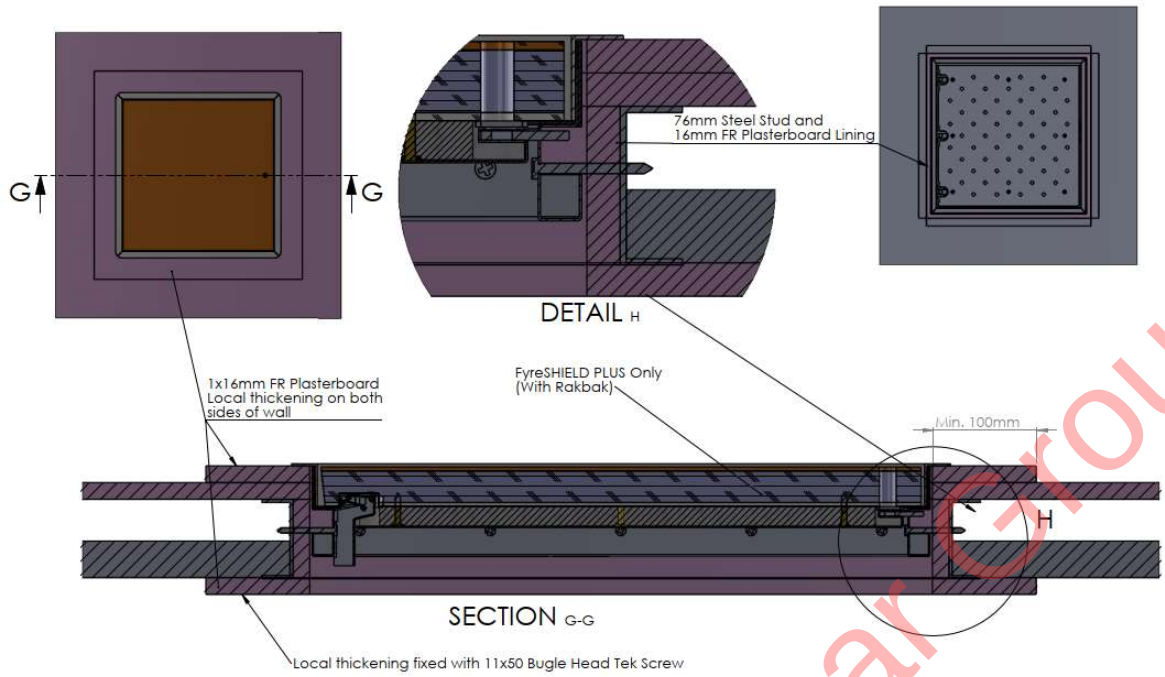

Figure 8 **Hinged FyreSHIELD access panel in AlphaPanel + plasterboard wall system (minimum overall thickness of 123 mm and studs covered with fire-rated plasterboard strips) – Configuration 2**

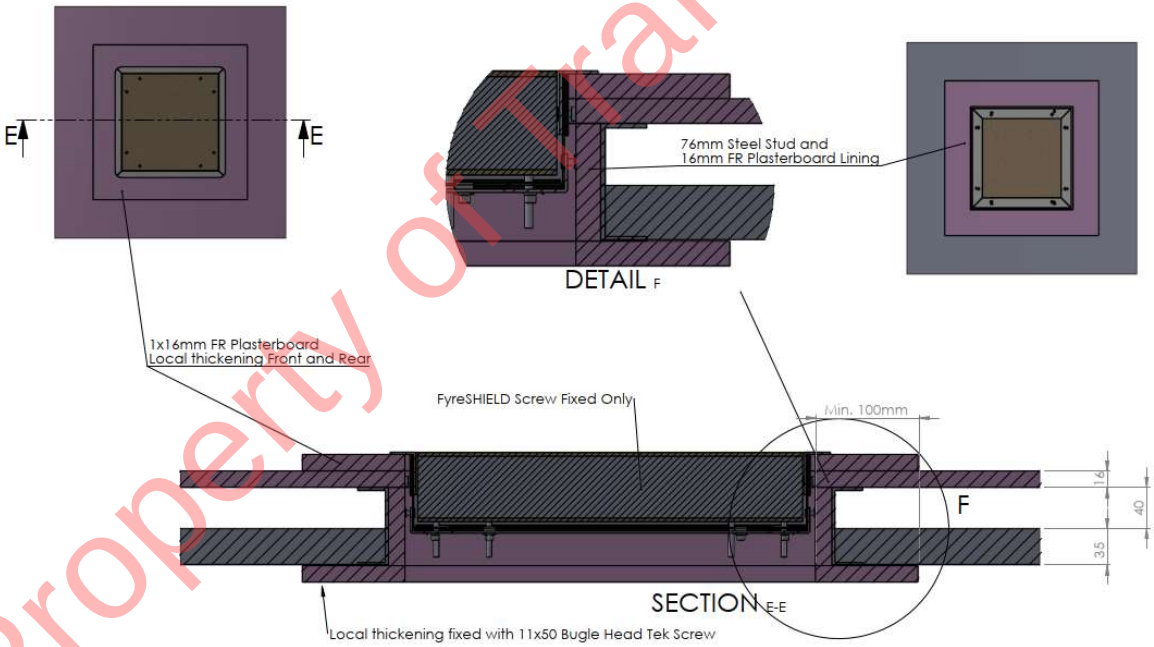

Figure 9 **Installation of screw-fixed FyreSHIELD access panel in AlphaPanel + plasterboard wall system (minimum overall thickness of 123 mm and studs covered with fire-rated plasterboard strips)**

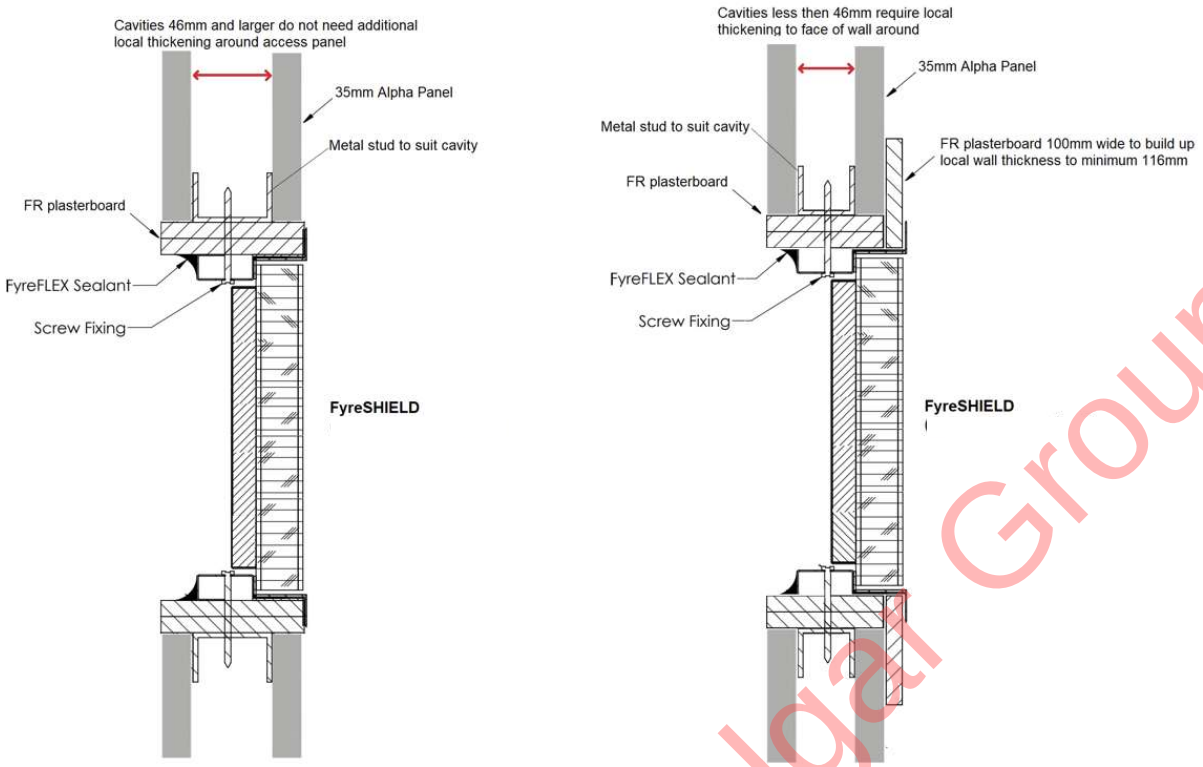

Figure 10 Installation of hinged FyreSHIELD access panel in AlphaPanel wall system – Configuration 3

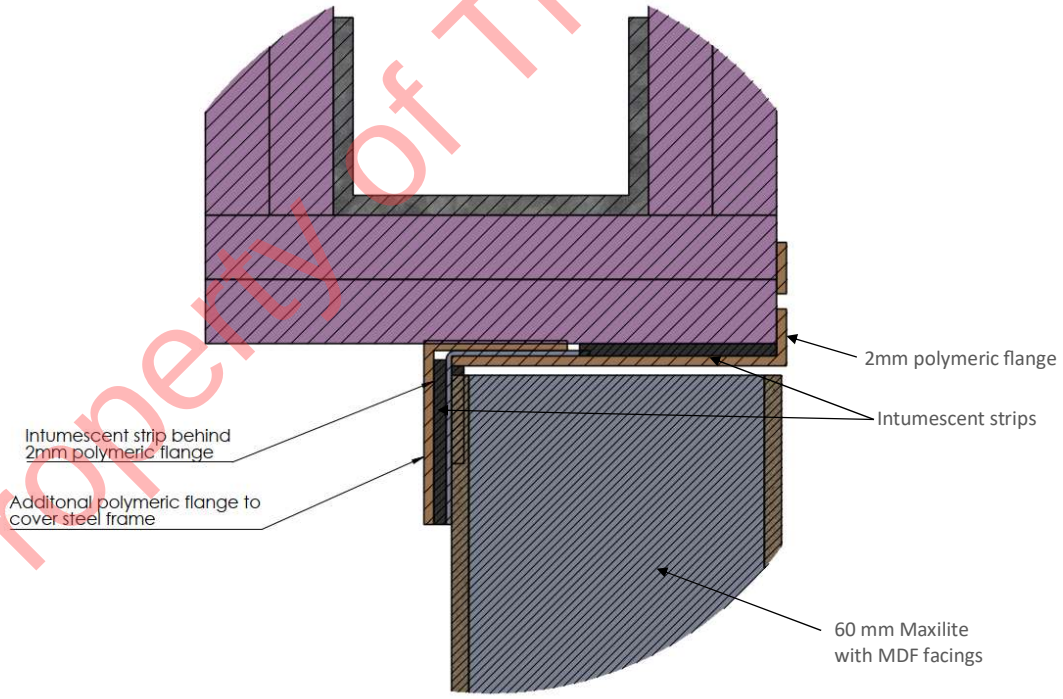

Figure 11 Screw-fixed FyreSHIELD access panel for two-way FRL

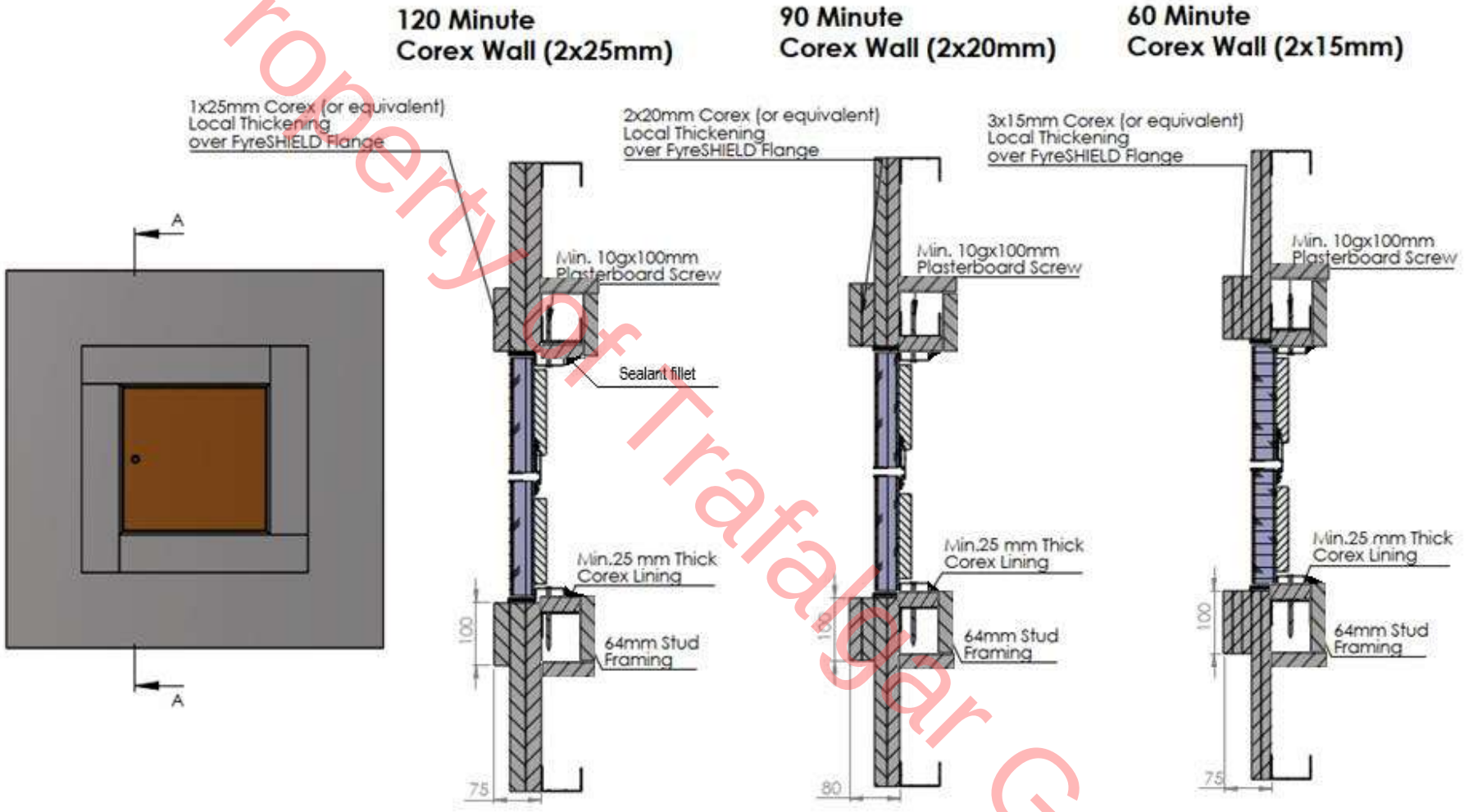

Figure 12 Installation of hinged FyreSHIELD access panels in A1 Corex shaft wall systems (cross-section line located over the lock hole)

5. Applicability of tested systems in accordance with AS 1530.4:2014

5.1 Description of variation

Fire resistance tests FSP1307 and FR3982 were conducted in accordance with AS 1530.4:2005, and test FSH0597 was conducted in accordance with AS 1530.4:1997. These standards differ from AS 1530.4:2014 and the effect these differences have on the fire resistance performance of the referenced test specimens is discussed below.

5.2 Methodology

The method of assessment used is summarised in Table 6.

Table 6 Method of assessment

Assessment method	
Level of complexity	Intermediate assessment
Type of assessment	Qualitative and comparative

5.3 Tests conducted in accordance with AS 1530.4:2005 sections 2 and 10

5.3.1 Furnace temperature

The same furnace heating regime is stipulated in both AS 1530.4:2005 and AS 1530.4:2014 and follows the below trend:

$$T = 345log_{10}(8 + 1) + 20$$

Where:

T = furnace temperature at time (t), in degrees centigrade

t = time into the test, measured in minutes from the ignition of the furnace

The parameters outlining the accuracy of control of the furnace temperature in AS 1530.4:2014 and AS 1530.4:2005 are also not appreciably different.

5.3.2 Furnace pressure

The furnace pressure conditions for single and multiple penetration sealing systems in the two standards are not appreciably different.

It must be noted that the wording has changed between the two versions of AS 1530.4, however both standards require that the following pressure conditions are met:

- A pressure of 15 ± 3 Pa must be established at the centre of a single horizontal penetration within a vertical separating element that has a maximum height of ≤ 1 m
- If a single horizontal penetration is tested in a vertical separating element that has a height more than 1 m, the pressure at the top of the separating element must be 20 ± 3 Pa and the services must be included in the zone where positive pressure exceeds 10 Pa.
- If more than one penetration sealing system is tested in a vertical separating element, the pressure conditions specified in item (a) or (b) must apply to the lowest penetration.
- For horizontal specimens, a pressure of 20 ± 3 Pa must be maintained 100 mm below the separating element.

The parameters outlining the accuracy of control of the furnace pressure in the two standards are also not appreciably different.

5.3.3 Performance criteria

AS 1530.4:2014 specifies the following performance criteria for penetrations:

- integrity
- insulation

5.3.4 Integrity

Both AS 1530.4:2014 and AS 1530.4:2005 define integrity failure has collapse, development of cracks, fissures, other openings and other relevant occurrences.

The measurement of the integrity of the test specimen must be made by a cotton pad, gap gauges or sustained flaming. A cotton pad is only suitable for insulated assemblies (except for service penetrations) and so is suitable for the ceiling systems discussed in this report.

There are no differences between the standards regarding the size and the way in which the cotton pad is applied. Both standards require a 20 mm thick × 100 mm square cotton pad weighing between 3 g and 4 g for all elements of construction – except when a smaller cotton pad (20 mm thick × 30 mm square) may be required for densely packed service penetrations.

However, AS 1530.4:2014 also defines when the application of the cotton pad should be discontinued. It states that “except for penetration systems, the use of the cotton pad shall be discontinued over areas where the temperature exceeds 300ºC measured by a thermocouple with the edge of the pad aligned with the edge of the gap.” This is not defined as a requirement in AS 1530.4:2005.

Other than the cotton pad test, integrity is also evaluated with the use of a 6 mm or 25 mm gap gauge – as applicable or when sustained flaming occurs for longer than 10 s on the surface of the unexposed face. These criteria are the same between the two standards.

5.3.5 Insulation

The failure criteria for insulation in AS 1530.4:2014 and AS 1530.4:2005 are not appreciably different. They are defined as:

- The average temperature on the unexposed face exceeds the initial temperature by more than 140 K or
- The temperature at any location on the unexposed face exceeds the initial temperature by more than 180 K.

The location of the unexposed side thermocouples is also not appreciably different between the two standards.

5.4 Tests conducted in accordance with AS 1530.4:1997 sections 2 and 4

5.4.1 Furnace temperature

The main difference between the heating curve specified in AS 1530.4:2014 and AS 1530.4:1997 is the definition of the ambient temperature conditions. In AS 1530.4:1997, the actual ambient temperature at the start of the test must be used (T_0), whereas in AS 1530.4:2014, a constant value of 20ºC is used. In FSH0597, an ambient temperature of 19ºC was measured at the start of the test so the temperature of the furnace should not be appreciably different between the two standards.

AS 1530.4:2014 specifies furnace temperature to follow the below trend:

$$T_{AS1530.4:2014} = 345log_{10}(8 + 1) + 20$$

AS 1530.4:1997 specifies furnace temperature to follow the below trend:

$$T_{AS1530.4:1997} = 345log_{10}(8t + 1) + T_0, 10°C \leq T_0 \leq 40°C$$

The parameters outlining the accuracy of control of the furnace temperature in AS 1530.4:2014, and AS 1530.4:1997 are not appreciably different.

5.4.2 Furnace pressure

The furnace pressure conditions for horizontal separating elements in the two standards are not appreciably different and is denoted to be such that a pressure of 20 Pa is established at a position 100 mm below the underside of the test specimen.

The parameters outlining the accuracy of control of the furnace pressure in the two standards are also not appreciably different.

5.4.3 Performance criteria

AS 1530.4:2014 specifies the following performance criteria for ceiling systems:

- structural adequacy (not relevant to this assessment)
- integrity
- insulation
- resistance to incipient spread of fire (RISF)

5.4.4 Integrity

AS 1530.4:1997 deems integrity failure to occur upon collapse, the development of cracks, fissures, or other openings through which flames or hot gases can pass. There is no requirement for a cotton pad test. However, there were no observations made for the specimen relevant to this assessment in FSH0597 which are considered likely to have warranted the application of a cotton pad.

5.4.5 Insulation

The failure criteria for insulation in AS 1530.4:2014 and AS 1530.4:2005 are not appreciably different. They are defined as:

- The average temperature on the unexposed face exceeds the initial temperature by more than 140 K or
- The temperature at any location on the unexposed face exceeds the initial temperature by more than 180 K.

The location of the unexposed side thermocouples is also not appreciably different between the two standards.

5.4.6 Resistance to incipient spread of fire (RISF)

AS 1530.4:1997 states that failure in relation to RISF will occur when the average temperature rise measured by the RISF thermocouples placed within the cavity of the ceiling exceeds 180ºC.

However, AS 1530.4:2014 states that failure in relation to RISF will occur when the maximum temperature of the RISF thermocouples exceeds 250ºC. Therefore, AS 1530.4:1997 can be considered more onerous as the time taken to reach 180ºC will be lower than the time taken to reach 250ºC.

AS 1530.4:2014 also defines location of RISF thermocouples when ceiling or floor attachments are present which are not specified in AS 1530.4:1997. However, this is not relevant to FSH0597 which did not contain any fixtures.

5.5 Application of test data to AS 1530.4:2014

Based on the above discussion and in the absence of any foreseeable integrity and insulation risk, it is concluded that the results relating to the integrity and insulation performance of the specimens tested in FSH0597, FSP1307 and FSP3982 can be used to assess the integrity and insulation performance in accordance with AS 1530.4:2014.

6. Assessment

6.1 Description of variations

It is proposed that hinged and screw-fixed Trafalgar FyreSHIELD access panels tested in various separating elements are assessed, subject to the variations given in Table 4.

Separating elements assessed are:

- 116 mm or 96 mm or 90 mm thick plasterboard walls with varying number and thicknesses of plasterboard layers
- 60 mm thick Pronto Panel™ walls
- 75 mm thick Hebel or Autoclaved Aerated Concrete (AAC) walls
- 78 mm thick Speedpanel walls
- AlphaPanel® walls in three configurations
- A1 Corex shaft walls in three configurations (2 × 15 mm, 2 × 20 mm and 2 × 25 mm)
- 96 mm or 90 mm thick shaft walls
- Minimum 116 mm thick concrete / masonry walls
- Plasterboard floor / ceiling systems with varying number and thicknesses of plasterboard layers.

It is also proposed that the FyreSHIELD access panels are assessed with construction details of access panels tested in FRT200160 and FRT200161. Construction details to include:

- The optional local thickening of the Hebel and plasterboard wall systems using additional fire-rated plasterboard to prevent the frame from protruding.
- A bead of Trafalgar FyreFLEX™ sealant applied around the perimeter of the aperture and to the back of the flange before inserting the panel into the wall.
- Adding Gee Whiz intumescent strips to line the lock hole when the Rakbak is not installed.
- Adding Gee Whiz intumescent strips to the door seat.
- FyreFrame incorporating 2 mm thick polymeric flanges with Gee Whiz intumescent backing.
- Openings in fire barriers up to 10 mm larger than frame size.
- Door panel of hinged access panel consisting of a 30 mm thick Maxilite core with MDF on one face and fibre cement on the other and optionally cladded with Rakbak (20 mm deep steel back pan with 25 mm thick rockwool (density 80 kg/m³) sandwiched to the rear of door panel).
- Door panel of screw-fixed access panel consisting of a 60 mm thick Maxilite core with MDF facings on both sides
- The framing of the screw-fixed access panels to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel covering the steel pan. An intumescent strip is to be installed behind the polymeric flange – as shown in Figure 11.
- Optional wet wall application for polymeric flanges of access panels in plasterboard separating elements.

6.2 Methodology

The method of assessment used is summarised in Table 7.

Table 7 Method of assessment

Assessment method	
Level of complexity	Complex assessment
Type of assessment	Qualitative and comparative

6.3 Fire resistance performance of FyreSHIELD access panels in various separating elements

6.3.1 Plasterboard walls with 2 × 13 mm thick plasterboard layers

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panels up to 600 mm × 600 mm installed in minimum 116 mm thick plasterboard wall systems that consist of minimum 64 mm deep steel studs cladded with two layers of minimum 13 mm thick fire-rated plasterboard on each side. Apertures are proposed to be framed and lined with fire-rated plasterboard equal to the wall specifications. It is also proposed that the access panels are assessed with the variations listed in section 6.1.

Hinged access panels

In test report FSV2163, the separating element tested was a 3000 mm wide × 2770 mm high × 116 mm thick plasterboard wall with four access panels, two service penetrations and two wall system perimeter joints. The wall system consisted of a 64 mm deep 0.5 BMT steel framing system with two layers of 13 mm fire-rated plasterboard on both the exposed and unexposed sides. Specimens 1 to 4 were FyreSHIELD fire-rated access panels.

Specimen 1 was a nominal 400 mm × 400 mm hinged FyreSHIELD PLUS access panel fitted into a 410 mm × 410 mm aperture within the plasterboard wall. The access panel opened away from the furnace. The access panel consisted of a 1.1 mm thick × 400 mm × 400 mm externally profiled galvanised steel frame with a 385 mm × 385 mm × 2 mm thick polymeric flange. Gee Whiz 25 mm wide × 1.8 mm thick intumescent strips were fitted to the outside perimeter and vertical faces of the steel frame. The polymeric flange had a perforated edge face to form a set bead (wet wall) to be plastered into place with Gyprock plasterboard compound. A bead of Trafalgar FyreFLEX™ sealant was applied to the rear of the flange before fitting and a 10 mm × 10 mm fillet was applied to the rear perimeter against the plasterboard lining in the aperture. This FyreSHIELD access panel consisted of a laminated door panel with a 4 mm front facing, 30 mm Maxilite core, 4.5 mm fibre-cement back facing with a 20 mm deep × 0.5 mm thick perforated galvanised steel backing (Rakbak) filled with 25 mm thick Rockwool. Specimen 2 was identical to specimen 1 but was installed in the reverse orientation so that the front face of the access panel was on the exposed side. Both access panels 1 and 2 were hinged and secured to the separating element with 10g × 100 mm plasterboard screws at nominal 200 mm centres.

Specimen 1 achieved an FRL of -/120/90 with the insulation failure occurring due to an average temperature rise greater than 140ºC on the unexposed face of the panel at 90 minutes. Specimen 2 achieve an FRL of -/120/60 with the insulation failure occurring on the unexposed face of the access panel with a maximum temperature rise of 180ºC at 25 mm from the frame top-centre at 81 minutes.

Considering the fire performance in FSV2163, it can be expected that 400 mm × 400 mm hinged FyreSHIELD access panels with a 30 mm thick Maxilite core and MDF facing on one side and fibre cement on the other side, installed in 116 mm thick plasterboard walls (with two layers of 13 mm thick plasterboard on both sides), will achieve an FRL of -/120/60 with the Rakbak for two-way exposure – in accordance with AS 1530.4:2014. The polymeric flange design must be maintained as tested and overlap with the separating element. Optionally the polymeric flange can be perforated and plastered into place (wet wall) as tested in FSV2163. This variation is not expected to detrimentally affect the temperatures measured on the flange as the material remains unchanged.

One of the proposed variations is to assess hinged access panels with dimensions up to 600 mm × 600 mm. It is considered that increasing the aperture in a wall system may be detrimental and may increase the chances of integrity and insulation failure.

The integrity performance can be addressed by referencing FRT200160 and FRT200161 where 600 mm × 600 mm hinged FyreSHIELD access panels penetrating 60 mm thick Pronto Panel™ walls were tested. The panel in FRT200160 opened towards the furnace and the access panel in FRT200161 opened away from the furnace. As discussed in section 6.3.6, these panels were assessed to achieve an FRL of -/90/60.

The significance of this test result is that it confirms that, despite the low wall thickness and the large aperture, no integrity failure is expected to occur around the perimeter of the access panel. The proposed plasterboard wall system is 116 mm thick which is greater than the tested Pronto Panel™ and is expected to provide a similar, if not greater, rigidity when exposed to fire conditions. Therefore, the integrity performance assessed for the smaller access panels in tests FSV2163 and FRT180356

is expected to be maintained if the panel sizes were increased, provided that the fixing conditions and sealant applications are maintained as tested in FSV2163. Therefore, it is expected that increasing the access panel size from 400 mm × 400 mm to 600 mm × 600 mm will not be detrimental to the integrity performance up to 120 minutes.

To further ensure that integrity performance is maintained, Trafalgar FyreFLEX™ sealant must be applied around the perimeter of the aperture and to the back of the flange before inserting the panel into the wall, a 10 mm × 10 mm sealant fillet must be applied at the rear framing and the separating element, Gee Whiz intumescent strips must be added to the door seat and the annular gap must be maximum 10 mm.

For the insulation performance of the larger access panels, reference is again made to FRT200160 and FRT200161. In FRT200160, thermocouples were placed on the separating element (TC111-TC115), on the access panel frame (TC107-TC110) and on the access panel leaf (TC101-TC105). After reviewing the time vs temperature test data from these thermocouples, it was concluded that the insulation failure occurred at approximately 84 minutes. This is because the average temperature recorded by the thermocouples placed on the of the unexposed surface thermocouples recorded a temperature of 157ºC exceeding the allowable average temperature rise of 140ºC – as stipulated in Clause 2.13.3(a) of AS 1530.4:2014. In FRT200161, insulation failure occurred at 73 minutes due to integrity failure.

Therefore, it can be expected that a 600 mm × 600 mm hinged access panels with the Rakbak will maintain insulation for up to 60 minutes – similar to the smaller hinged access panels tested in FSV2163 – with the access panel opening towards or away from the furnace.

It is also proposed to assess the fire resistance performance of the hinged access panels without the Rakbak – which is a steel back pan sandwiching 25 mm thick mineral wool infill with a nominal density of 80 kg/m^3. The FyreSHIELD access panel without the Rakbak is made of a the FRC+ panel leaf consisting of a laminated 30 mm Maxilite core and the FyreFrame.

In test report FRT180356.2, the tested assembly consisted of a 1595 mm wide × 1595 mm long × 116 mm thick fire-rated plasterboard wall system penetrated by two hinged access panels opening away from the furnace. The wall system consisted of 64 mm 0.5 BMT steel framing with two layers of 13 mm fire-rated plasterboard on both the exposed and unexposed sides.

Specimen A consisted of a hinged Trafalgar FRC+ access panel with a plastic flange design. This access panel did not contain a Rakbak with rockwool filling, however the rear of the panel was thickened with 9 mm thick Orbit board (nominal density 1200 kg/m^3). The panel core was 30 mm thick Maxilite calcium silicate board with 3.2 mm Duracote facing on both sides of the panel. The access panel was 400 mm × 400 mm in size and the aperture size was 410 mm wide × 410 mm high. A 20 mm × 20 mm fillet of Trafalgar FyreFLEX™ sealant was applied at the interface between the access panel rear framing and the separating element on the exposed side in the aperture. The sealant was also applied along the perimeter of the front frame behind the flange to fill a nominal 5 mm annular gap to a depth of 5 mm. The access panel was secured to the separating element using 10g × 100 mm bugle head plasterboard screws at 150 mm centres and the aperture was lined with two layers of 13 mm thick fire-rated plasterboard.

When tested, the system continued to maintain integrity performance for 75 minutes when flaming was observed at the keyhole for greater than 10 seconds. It must be noted that the lock slot was improperly located above the lock tongue in a way that prevented the lock from disengaging.

For the insulation performance, thermocouples were placed on the separating element (TC031-TC035), on the access panel frame (TC021-TC025) and on the access panel leaf (TC011-TC015). After reviewing the time vs temperature data from these thermocouples, it was concluded that insulation failure occurred at approximately 57 minutes. This was because the average temperature rise on the unexposed surface of the panel leaf exceeded 140ºC as stipulated in Clause 2.13.3(a) of AS 1530.4:2014. The maximum temperature rise exceeded the 180ºC criteria at 59 minutes on the unexposed side of the access panel leaf. The test was conducted for 121 minutes.

One of the proposed variations listed in section 6.1 is the introduction of Gee Whiz intumescent strips to line the keyhole. This is considered to rectify the flaming which occurred at the keyhole around the 75-minute mark. Other than this flaming at the lock hole, no other integrity failure was observed on the access panel after 75 minutes until the end of the test at 121 minutes.

As per the discussion presented above for hinged access panels with Rakbak, the integrity performance of 600 mm × 600 mm panels without Rakbak is not expected to be detrimentally affected

in plasterboard walls for up to 120 minutes, provided that the fixing conditions and sealant applications are maintained as tested in FRT180356.

Additionally, it is expected that, if the integrity failure in test FRT180356.2 is prevented at 75 minutes by rectifying the flaming occurring at the keyhole, the average surface temperature rise on the panel leaf would also be maintained below 140ºC for an additional 3 minutes up to 60 minutes due to the lack of flaming coming through to the unexposed side. The above applies to the 400 mm × 400 mm hinged access panel with the rear of the panel thickened with Orbit board.

When the access panel size is increased and the Orbit board is removed, it is expected that the insulation performance will not be detrimentally affected up to 30 minutes considering the safety margin.

As the lockhole is no longer protected with a Rakbak, it must be lined with intumescent to eliminate the possibility of early integrity failure from flaming through the lockhole. Trafalgar FyreFLEX™ sealant must be applied in the annular gap between the access panel frame and the wall to a depth of 10 mm and finished with a 10 mm fillet on the side of the FyreFrame. Sealant must also be applied to the back of the PVC flange.

Specimen B of FRT180356.2 consisted of a hinged Trafalgar FRC+ access panel. This access panel did not contain a Rakbak with rockwool filling. The access panel was 400 mm × 400 mm in size and the aperture size was 410 mm wide × 410 mm high. The panel core was 30 mm thick Maxilite calcium silicate board with 3.2 mm Duracote facing on the front and 4.5 mm fibre cement laminated on the rear side. Unlike specimen A, specimen B consisted of a steel flange. A 20 mm × 20 mm fillet of Trafalgar FyreFLEX™ sealant was applied at the interface between the access panel rear framing and the separating element on the exposed side in the aperture. The sealant was also applied along the perimeter of the front frame behind the flange to fill a nominal 5 mm annular gap to a depth of 5 mm. The access panel was secured to the separating element using 10g × 100 mm bugle head plasterboard screws at 150 mm centres and the aperture was lined with two layers of 13 mm thick fire-rated plasterboard.

The specimen achieved an integrity performance of 121 minutes without failure. Insulation failure occurred at 25 minutes with the maximum temperature increase exceeding 180°C at mid-height of the western frame jamb. The average temperature rise of the panel leaf exceeded 140°C at 42 minutes.

Therefore, it is expected that there will not be any insulation failure on the panel leaf for 30 minutes without the Rakbak. Additionally, with further evidence from specimen A, if the steel flange is replaced with the PVC flange as proposed, it is expected that insulation failure will not occur on the panel frame for at least 30 minutes.

Specimen B without the Rakbak was tested opening away from the furnace. Exposure from the rear of the panel is considered to be more onerous as this causes the steel frame to be exposed to fire conditions which can result in heat conduction to the unexposed side. Therefore, the FRL assessed for hinged access panels without Rakbak opening away from the furnace can also be extended to panels without Rakbak opening into the furnace.

Considering the above discussion, hinged FyreSHIELD access panels up to 600 mm × 600 mm in size are expected to achieve an FRL of -/120/60 with the Rakbak and -/120/30 without the Rakbak – in accordance with AS 1530.4:2014 – when installed in minimum 116 mm thick plasterboard walls. The hinged access panels must be secured to the separating element with 10g × 100 mm plasterboard screws at nominal 150 mm centres.

Screw-fixed access panels

Specimen 3 of FSV2163 consisted of a nominal 400 mm × 400 mm hinged FyreSHIELD access panel fitted into a 410 mm × 410 mm aperture within the plasterboard wall. The access panel opened out away from the furnace chamber. It consisted of a 395 mm × 395 mm externally profiled galvanised steel frame with a 389 mm × 389 mm polymeric flange. Gee Whiz 25 mm wide × 1.8 mm thick intumescent strips were fitted to the outside perimeter and vertical faces of the steel frame. The polymeric flange had a perforated edge face to form a set bead (wet wall) to be plastered into place. The FyreSHIELD access panel leaf was made from a 60 mm thick Maxilite core with 4 mm thick MDF facings on both sides. The access panel was secured to the separating element with 10g × 100 mm plasterboard screws at nominal 200 mm centres. The access panel door was fixed to the frame with two M6 × 100 mm machine screws per side (eight in total) at equidistant centres.

Specimen 4 was identical to specimen 3 but was installed in the reverse orientation so that the front face of the access panel was on the exposed side. Both access panels 3 and 4 were screw fixed and had no Rakbak.

Specimen 3 achieved an FRL of -/120/120. Specimen 4 achieved and FRL of -/120/90 with the insulation failure occurring on the unexposed face of the access panel with a maximum temperature rise of 180ºC measured on the top-centre of the steel back frame of the panel at 109 minutes. The main difference between the panels was the orientation, and therefore the location of the polymeric flange with respect to the direction of fire exposure.

As demonstrated by specimens 3 and 4, the 400 mm × 400 mm screw-fixed FyreSHIELD access panels installed in 116 mm thick plasterboard walls (with 2 layers of 13 mm thick plasterboard on both sides) are expected to achieve an FRL of -/120/120 with the polymeric flange on the unexposed side and an FRL of -/120/90 with the polymeric flange on the exposed side.

It is proposed that the fire performance of the screw-fixed panels is improved by modifying the design of the framing as shown in Figure 11. The screw-fixed panel framing is to be modified to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel covering the steel pan. An intumescent strip is installed behind the polymeric flange. The other leg of the flange will fit into the gap between the access panel frame and the aperture.

When the access panel is exposed to fire from the side with the polymeric flange overlapping the separating element (front face) as tested in specimen 4, thermocouples placed on the steel frame showed an insulation failure before 120 minutes. However, with the proposed design, the unexposed side thermocouples will be placed on the additional plastic flange instead. Due to the lower thermal conductivity of the plastic as well as the additional thermal protection provided by the intumescent backing strip, it is expected that the temperatures recorded on the plastic flange on the unexposed side will be lower than the insulation failure threshold for up to 120 minutes.

Therefore, with this variation, the 400 mm × 400 mm screw-fixed FyreSHIELD access panels installed in 116 mm thick plasterboard walls (with 2 layers of 13 mm thick plasterboard on both sides) are expected to achieve an FRL of -/120/120 when exposed from either side.

To consider the increase in size of the panel to the proposed 600 mm × 600 mm, further reference is made to test report FSP1307. Here, the tested screw-fixed access panel measured nominally 740 mm high × 740 mm wide × 68 mm thick and was installed in a 1150 mm × 1150 mm × 230 mm masonry wall. The access panel was fabricated using a 60 mm thick Maxilite board core faced with 4 mm thick MDF board. The MDF face sheeting was fixed to the Maxilite core using a contact adhesive. The access panel was fitted into the perimeter frame allowing a 5 mm clearance on all sides. The access panel was fixed into the steel perimeter frame using 100 mm long countersunk head M6 bolts fitting into the frame mounted M6 speed nuts at nominally 250 mm centres. Lorient HP4002 intumescent sealant was located between the edge of the access panel and the perimeter frame on all four sides of the panel.

The tested system failed the insulation criteria in accordance with clause 2.13.3 (b) of AS 1530.4:2014 when the maximum temperature rise exceeded 180ºC on the unexposed face of the perimeter frame at 20 minutes. The integrity performance was maintained for the duration of the test. The average temperature rise measured by the thermocouples on the unexposed face of the access panel did not exceed the average rise limit of 140ºC or the maximum limit of 180ºC at the time of test termination. The specimen achieved an FRL of -/240/-.

This shows that increasing the size of the access panel to 600 mm × 600 mm is not expected to detrimentally affect the integrity performance up to 120 minutes, provided that the plasterboard wall also has an established integrity performance of at least 120 minutes.

Time vs temperature data obtained from the thermocouples on the unexposed face of the access panel in FSP1307 show that the temperature on the access panel leaf on the unexposed side remained less than 100ºC for up to 175 minutes. Also, the temperature rise on the separating element adjacent to the perimeter frame exceeded 180ºC at 67 minutes.

It is proposed that the access panel consists of a steel frame with a polymeric flange (flanged edge (FE) frame type) instead of the tested steel flange. This is similar to the specimen in FSV2163 where PVC flange equal angles were fixed to the front of the steel access panel frame to form a flange.

Specimens 3 and 4 of FSV2163 showed that, with the polymeric flanged frame, the temperature increase on the frame itself can be maintained to be less than the insulation failure threshold for up to 120 minutes when the polymeric flange is on the unexposed side. As discussed above, with the

additional variation to the screw-fixed panels, the insulation performance can be extended to 120 minutes when exposed to fire from either side.

Considering that the insulation failure in FSP1307 occurred on the perimeter frame, with the panel leaf and the separating element measuring temperatures lower than 180ºC for up to 175 minutes, it can be expected that substituting the tested steel perimeter frame with a polymeric FE frame or polymeric perforated frame with plaster will improve the insulation performance of the panel up to 120 minutes. The early insulation failure on the separating element is also expected to be delayed due to lower temperatures on the polymeric flange and will be limited by the established insulation performance of the plasterboard wall. The integrity performance is not expected to be detrimentally affected with the change in the frame.

Therefore, 600 mm × 600 mm screw-fixed FyreSHIELD access panels, with the additional proposed variations shown in Figure 11, installed in 116 mm thick plasterboard walls (with 2 layers of 13 mm thick plasterboard on both sides) are expected to achieve an FRL of FRL of -/120/120 when exposed to fire from either side – in accordance with AS 1530.4:2014. The polymeric flange design must be maintained as overlapping with the separating element on one side and overlapping the steel pan on the other side with intumescent backing.

The screw fixings securing the access panel to the plasterboard wall must be maintained as minimum 10g × 100 mm screws at maximum 150 mm spacing and the screw fixings securing the door panel to the access panel frame must also be maintained as tested in FSV2163.

6.3.2 Plasterboard walls with 1 × 13 mm thick plasterboard layer

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panels up to 600 mm × 600 mm – fixed to the aperture as per the manufacturer's guidelines with 10 g × 100 mm screws at 150 mm centres – when installed in a minimum 90 mm thick plasterboard wall system that consists of minimum 64 mm deep steel studs cladded with one layer of 13 mm thick fire-rated plasterboard on each side. Apertures are proposed to be framed and lined with FR plasterboard equal to the wall specifications. It is also proposed that the access panels are assessed with the variations listed in section 6.1.

Hinged access panels

As discussed in section 6.3.1, the test in FRT180356.2 consisted of a 1595 mm wide × 1595 mm long × 116 mm thick fire-rated plasterboard wall system penetrated by two access panels of size 410 mm × 410 mm which opened away from the furnace. The wall system consisted of 64 mm 0.5 BMT steel framing system with two layers of 13 mm fire-rated plasterboard on both the exposed and unexposed side. Specimen A was a hinged FyreSHIELD access panel with a Trafalgar FRC+ door panel with polymeric flange on the side of the door panel. There was no Rakbak but the rear of the panel was thickened with a 9 mm thick Orbit board. Specimen A achieved an FRL of -/60/30 in the test.

The integrity performance in the test was limited to 75 minutes. This performance is not expected to be detrimentally affected for at least up to 60 minutes by reducing the number of plasterboard layers to one, provided that the variations in section 6.1 are included – such as lining the lockhole with intumescent strips – and the plasterboard wall system is tested or assessed by an accredited testing laboratory to have an established integrity performance of at least 60 minutes. Adding a bead of Trafalgar FyreFLEX™ sealant to the back of the flange before inserting the panel into the wall, adding Gee Whiz intumescent strips to line the lock hole, adding Gee Whiz intumescent strips to the door seat and installing the FyreFrame incorporating a 2 mm thick polymeric flange with Gee Whiz intumescent backing are some of the proposed variations which are expected to maintain the integrity performance.

Similarly, specimen B was a hinged FyreSHIELD access panel with a Trafalgar FRC+ door panel with steel flange on the side of the door panel. There was no Rakbak. The integrity performance was maintained for 121 minutes with no failure. This means that the integrity performance of the system is expected to be limited by the integrity performance of the separating element itself in which case the 1 × 13 mm plasterboard wall must be tested or assessed by an accredited testing laboratory to have an established integrity performance of at least 60 minutes.

Considering the time vs temperature graphs for the separating element in FRT180356.2, there is a plateau in the first 15 minutes. This is likely due to the evaporation of moisture from the outermost plasterboard layer before fall-off. If it is proposed that the wall system consists of only one plasterboard layer, then this 15-minute period of protection from a second outer plasterboard layer on both sides will be absent and so the one and only plasterboard layer on the exposed side will be

directly exposed at the start of the test. If the time-temperature curves for access panel B (with the steel flange design which is more onerous and which also did not contain any additional thickening with an Orbit board) is then shifted by 15 minutes so that the temperature readings start at 15 minute exposure of the original test – to denote the start of the exposure of the inner plasterboard layer and the access panel – then the temperatures on the unexposed face still remain less than the failure threshold for up to 30 minutes. The expected temperatures on the frame are obtained through the same method with access panel A which consisted of a PVC flange. It is expected that the temperatures on the frame will remain less than the failure threshold for up to 30 minutes.

Therefore, the assessed FRL of hinged FyreSHIELD access panels without Rakbak installed in plasterboard walls with 1 × 13 mm layer on both sides is -/60/30. The polymeric flange design must be maintained as tested and overlap with the separating element. Optionally it can be plastered into place (wet wall) as tested in FSV2163.

With the Rakbak, it is expected that the insulation performance will be improved as shown by specimens 1 and 2 in FSV2163. However, since the specimens in FSV2163 were tested in a two-layer system, the results cannot be directly applied. Using the time vs temperature data given in FRT180356.2, it is evident that the integrity and insulation performances reduce which will affect the performance of the panel itself. Therefore, the assessed FRL of FyreSHIELD access panels with Rakbak installed in plasterboard walls with a 13 mm layer on both sides is -/60/45. The polymeric flange design must be maintained as tested and overlap with the separating element. Optionally it can be plastered into place (wet wall) as tested in FSV2163.

For an FRL of -/60/60, the aperture must be built locally with an additional layer of 13 mm plasterboard extending at least 100 mm from the aperture in all directions on both sides of the wall. The hinged access panels must be secured to the separating element with 10g × 100 mm plasterboard screws at nominal 150 mm centres.

Screw-fixed access panels

Specimens 3 and 4 from FSV2163 are referenced for the screw-fixed panels. Similar to the discussion above, the absence of the first layer of plasterboard is considered by shifting the time-temperature curves by 15 minutes. With the additional proposed modifications to the screw-fixed panel shown in Figure 11, it is expected that the insulation performance of the access panels will be maintained for up to 60 minutes for an FRL of -/60/60 when exposed to fire from either side.

Increase in size to 600 mm × 600 mm is not expected to detrimentally affect the integrity or insulation performance of the system as assessed above for plasterboard walls with two layers of fire-rated plasterboard. Therefore, the same FRL can be extended to access panels measuring 600 mm × 600 mm installed in plasterboard walls with one 13 mm layer on both sides.

The assessed FRL applies to screw-fixed panels with either flanged edge polymeric frame or with perforated polymeric frame with wet wall application overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side. Apertures must be framed and lined with fire-rated plasterboard equal to the wall specifications.

The screw fixings securing the access panel to the plasterboard wall must be maintained as minimum 10g × 100 mm screws at maximum 150 mm spacing and the screw fixings securing the door panel to the access panel frame must also be maintained as tested in FSV2163.

6.3.3 Plasterboard walls with 1 × 16 mm thick plasterboard layer

It is proposed to assess the fire resistance performance of FyreSHIELD access panel up to 600 mm × 600 mm – fixed to the aperture as per the manufacturer's guidelines with 10 g × 100 mm screws at nominal 200 mm centres – when installed in a minimum 96 mm thick plasterboard wall system that consists of minimum 64 mm deep steel studs cladded with one layer of 16 mm thick fire-rated plasterboard on each side. Apertures are proposed to be framed and lined with fire-rated plasterboard equal to the wall specifications. It is also proposed that the access panels are assessed with the variations listed in section 6.1.

Hinged and screw-fixed access panels

Reference is made to the assessed performance of 600 mm × 600 mm access panels in walls with 1 × 13 mm thick plasterboard layers, as discussed in section 6.3.2.

The integrity performance is expected to be maintained up to 90 minutes, provided that the variations in section 6.1 are included and the plasterboard wall system is tested or assessed by an accredited

testing laboratory to have an established integrity performance of at least 90 minutes. Adding a bead of Trafalgar FyreFLEX™ sealant to the back of the flange before inserting the panel into the wall, adding Gee Whiz intumescent strips to line the lock hole for panels without Rakbak, adding Gee Whiz intumescent strips to the door seat and installing the FyreFrame incorporating a 2 mm thick polymeric flange with Gee Whiz intumescent backing are some of the proposed variations which are expected to maintain the integrity performance.

The insulation performance of the access panels is not expected to vary from that assessed for the 600 mm × 600 mm access panels in plasterboard walls with 1 × 13 mm thick plasterboard layers as the difference in thickness is only 3 mm on either side.

Therefore, 600 mm × 600 mm hinged FyreSHIELD PLUS access panels installed in 96 mm thick plasterboard walls (with 1 layer of 16 mm thick plasterboard on both sides) will achieve an FRL of at least -/90/45 with the Rakbak and an FRL of -/90/30 without the Rakbak – for two-way exposure – in accordance with AS 1530.4:2014. The polymeric flange design must be maintained as tested and overlap with the separating element.

For an FRL of -/90/60, the aperture must be built locally with an additional layer of 16 mm plasterboard extending at least 100 mm from the aperture in all directions on both sides of the wall.

Following the same discussion for 1 × 13 mm plasterboard walls as presented in section 6.3.2, 600 mm × 600 mm screw-fixed FyreSHIELD PLUS access panels installed in 96 mm thick plasterboard walls (with 1 layer of 16 mm thick plasterboard on both sides) are assessed for an FRL of -/90/90 when exposed to fire from either side – in accordance with AS 1530.4:2014. The polymeric flange design must overlap with the separating element on one side and overlap the steel pan on the other side with intumescent backing as shown in Figure 11.

The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame with wet wall application on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side. Apertures must be framed and lined with fire-rated plasterboard equal to the wall specifications. The plasterboard wall system must be tested or assessed by an accredited testing laboratory to have an established FRL of -/90/90.

The access panels must be secured to the separating element with minimum 10g × 100 mm plasterboards screws installed at 150 mm centres.

6.3.4 Shaft walls with 2 × 13 mm plasterboard layers and 1 × 25 mm Shaft Liner

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panel up to 600 mm × 600 mm – fixed to the aperture as per the manufacturer's guidelines with 10 g × 100 mm screws – when installed in a shaft wall with a minimum 64 mm steel C-H stud cladded with two layers of 13 mm fire-rated plasterboard on the exposed side and a 25 mm fire-rated Shaftliner panel on the unexposed side. The C-H stud overlaps with the Shaftliner panel and the overall thickness of the wall system is 90 mm (as shown in Figure 5).

Hinged and screw-fixed access panels

The established FRL of the Shaft wall system described above must be tested or assessed by an accredited testing laboratory to be -/90/90. Therefore, based on the assessed performance of hinged 600 mm × 600 mm access panels in plasterboard walls as discussed in 6.3.1 to 6.3.3, it is expected that the same access panels in shaft wall systems will achieve a similar fire performance to 1 × 16 mm plasterboard wall described above.

However, with penetrations like access panels in the C-H stud in the shaftwall, reinforcing trimmers across the studs must be provided to stabilise the opening as C-H studs do not have noggins on the shaft wall side. If not, the plasterboard may fail integrity (and insulation) early around the penetration due to early fall off. The polymeric flange must also be maintained and the aperture must be lined with the same thickness as the fire-rated plasterboard layer on the exposed side. Furthermore, the leg of the J-track that overlaps with the 25 mm shaftliner panel and is exposed must be covered with minimum 13 mm thick fire-rated plastered.

Therefore, 600 mm × 600 mm hinged FyreSHIELD access panels installed in 90 mm thick shaft walls are expected to achieve an FRL of -/90/60 with the Rakbak and an FRL of -/90/30 without the Rakbak – for two-way exposure, subject to the above limitations. The aperture must be lined with fire-rated plasterboard to the wall specifications and the access panel must be secured to the wall with 10g × 100 mm screws at maximum 150 mm centres. To further ensure that integrity performance is

maintained, Trafalgar FyreFLEX™ sealant must be applied around the perimeter of the aperture and to the back of the flange before inserting the panel into the wall, a 10 mm × 10 mm sealant fillet must be applied at the rear framing and the separating element, Gee Whiz intumescent strips must be added to the door seat and the annular gap must be maximum 10 mm.

600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in 90 mm thick shaft walls will achieve an FRL of up to -/90/90 when exposed to fire from either side, subject to the above limitations. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame with wet wall application overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side (refer to Figure 11).

The shaft wall must have an established performance of at least -/90/90 as tested or assessed by an accredited testing laboratory and this assessment report must be reviewed in conjunction with a test report on a shaftwall system proving the FRL of the shaftwall system to be at least -/90/90.

The access panels must be secured to the separating element with minimum 10g × 100 mm plasterboards screws installed at 150 mm centres.

6.3.5 Shaft walls with 2 × 16 mm plasterboard layers and 1 × 25 mm Shaft Liner

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panel up to 600 mm × 600 mm – fixed to the aperture as per the manufacturer's guidelines with 10 g × 100 mm screws – when installed in a shaft wall with a minimum 64 mm steel C-H stud cladded with two layers of 16 mm fire-rated plasterboard on the exposed side and a 25 mm fire-rated Shaftliner panel on the unexposed side. The C-H stud overlaps with the Shaftliner panel and the overall thickness of the wall system is 96 mm (as shown in Figure 5).

Hinged and screw-fixed access panels

The established FRL of the Shaft wall system described above must be tested or assessed by an accredited testing laboratory to be -/120/120. Therefore, based on the assessed performance of hinged 600 mm × 600 mm access panels in plasterboard walls as discussed in 6.3.1 to 6.3.3, it is expected that the same access panels in shaft wall systems will achieve a similar fire performance to 2 × 13 mm plasterboard wall described above.

However, with penetrations like access panels in the C-H stud in the shaftwall, reinforcing trimmers across the studs must be provided to stabilise the opening as C-H studs do not have noggins on the shaft wall side. If not, the plasterboard may fail integrity (and insulation) early around the penetration due to early fall off. The polymeric flange must also be maintained and the aperture must be lined with the same thickness as the fire-rated plasterboard layer on the exposed side. Furthermore, the leg of the J-track that overlaps with the 25 mm shaftliner panel and is exposed must be covered with minimum 13 mm thick fire-rated plastered.

Therefore, 600 mm × 600 mm hinged FyreSHIELD access panels installed in 96 mm thick shaft walls are expected to achieve an FRL of -/120/60 with the Rakbak and an FRL of -/120/30 without the Rakbak – for two-way exposure, subject to the above limitations. The aperture must be lined with fire-rated plasterboard to the wall specifications and the access panel must be secured to the wall with 10g × 100 mm screws at maximum 200 mm centres. To further ensure that integrity performance is maintained, Trafalgar FyreFLEX™ sealant must be applied around the perimeter of the aperture and to the back of the flange before inserting the panel into the wall, a 10 mm × 10 mm sealant fillet must be applied at the rear framing and the separating element, Gee Whiz intumescent strips must be added to the door seat and the annular gap must be maximum 10 mm.

600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in 96 mm thick shaft walls will achieve an FRL of up to -/120/120 when exposed to fire from either side, subject to the above limitations. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame with wet wall application overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side (refer to Figure 11).

The shaft wall must have an established performance of at least -/120/120 as tested or assessed by an accredited testing laboratory and this assessment report must be reviewed in conjunction with a test report on a shaft wall system proving the FRL of the shaft wall system to be at least -/120/120.

The access panels must be secured to the separating element with minimum 10g × 100 mm plasterboards screws installed at 150 mm centres.

6.3.6 Pronto Panel™ walls

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panels up to 600 mm × 600 mm when installed in minimum 60 mm thick Pronto Panel™ walls.

Hinged access panels

The fire resistance performance of hinged FyreSHIELD access panels in 60 mm thick Pronto Panel™ walls was illustrated in tests FRT200160 R2.0 and FRT200161 R1.0.

In test report FRT200160, the tested assembly consisted of a 1600 mm × 1600 mm × 60 mm Pronto Panel™ incorporating 10 penetration systems and one access panel. Specimen K consisted of a 600 mm wide × 600 mm high hinged Trafalgar FRC+ access panel with Rakbak secured to the wall with 10g × 100 mm needle point screws at nominal 170 mm centres. The access panel frame was made of 1.1 mm galvanised mild steel and a 2 mm thick PVC flange was fixed to the front of the frame.

100 mm wide strips of 13 mm thick plasterboard were installed on the exposed side of the separating element around the aperture to locally thicken the wall system. The plasterboard was secured to the separating element with 6g × 32 mm long plasterboard screws. The access panel was then installed into the aperture with the access panel opening into the furnace. Trafalgar FyreFLEX™ sealant was applied in the annular gap between the frame and the wall to a nominal depth of 10 mm and finished with a 10 mm fillet on the unexposed side.

When tested, the system continued to maintain integrity until 118 minutes when a 30 second cotton pad test was carried out at the bottom west access panel hinge resulting in the ignition of the cotton pad. To measure the insulation performance, thermocouples were placed on the separating element (TC111-TC115), on the access panel frame (TC107-TC110) and on the access panel leaf (TC101-TC105). After reviewing the time vs temperature data of these thermocouples, it was concluded that the insulation failure occurred at approximately 84 minutes. This was because the average temperature of the unexposed surface of the access panel leaf reached 157ºC, exceeding the allowable average temperature increase of 140ºC in accordance with clause 2.13.3(a) of AS 1530.4:2014. Therefore, the tested FRL of the system was -/90/60.

In FRT200161, the construction was similar to FRT200160. The main difference was the orientation of the access panel with the panel leaf opening away from the furnace.

The tested assembly maintained an integrity performance for up to 73 minutes without any signs of gaps or cracks that could have initiated an integrity failure. At 73 minutes and 50 seconds, failure of integrity – in accordance with clause 2.13.2.4 of AS 1530.4:2014 – was recorded due to flaming of more than 10 seconds on the unexposed side along the latch edge of the access panel leaf.

To measure the insulation performance, thermocouples were placed on the access panel leaf (TC041-TC044), on the panel frame (TC051-TC055), on the plasterboard build up (TC061-TC065) and on the separating element (TC071-TC072). After reviewing the time vs temperature graphs of these thermocouples, it was observed that none of the thermocouples showed any temperature increase beyond the insulation failure threshold as per AS 1530.4:2014. The main reason for the insulation failure was due to the integrity failure observed at the 73 minutes mark of the test.

Post-test observations recorded in test report FRT200161 state that the tongue of the access panel latch was protruding approximately 30° from the body upon post-test examination. It is argued that the latch of the budget lock – used in test FRT200061 fixed to the latch side vertical edge of the door leaf at mid height on the exposed side – was not fully engaged into the frame slot. This was supported by the configuration of the access panel observed at 16 minutes into the test, where the access panel leaf was found to be pushed slightly away from the furnace. It is understood that this contributed to the premature failure in the integrity performance before 90 minutes.

Further reference is made to test FRT190298 where a 600 mm × 600 mm access panel in a 78 mm thick Speedpanel wall was tested. The hinged access panel tested was the same as that in FRT200161 installed in the same orientation (opening away from the furnace) and with the same lockset. However, the access panel in FRT190298 did not contain a Rakbak. The access panel was secured to the Speedpanel with 10g × 100 mm hex head self-drilling screws at 200 mm centres. When tested, the system continued to maintain the integrity performance throughout the 120 minutes of the test without any sign of gaps or cracks forming that could have initiated an integrity failure.

The significance of this observation is that it is a clear indication that – if the latching system was fully engaged onto the frame slot – it would have likely prevented the integrity failure around the perimeter of the access panel for up to 90 minutes.

Therefore, the expected fire resistance performance of the access panel tested in FRT200161 in this configuration is assessed to be -/90/60 based on the assumption that the latch of the lockset is fully engaged in the frame slots.

Therefore, 600 mm wide × 600 mm high hinged FyreSHIELD access panels with Rakbak, installed in 60 mm thick Pronto Panel™ walls – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture on the side of the panel leaf – can be expected to achieve an FRL of -/90/60 when exposed to fire from each direction, in accordance with AS 1530.4:2014. The access panel must have a 2 mm thick polymeric (or PVC) flange. 10g × 100 mm needle point screws must be used to secure the access panel to the Pronto Panel™ at nominal 170 mm centres.

It is also proposed to assess the expected fire resistance performance of the hinged access panel without the Rakbak – which is a steel back pan sandwiching 25 mm thick mineral wool infill with a nominal density of 80 kg/m^3.

Test report FP6372 details a test conducted on a 450 mm × 450 mm FyreSHIELD access panel without the Rakbak installed in a 75 mm thick Hebel panel wall. The panel leaf was on the unexposed side of the wall opening away from the furnace and there was no fire-rated plasterboard build up around the aperture.

The time vs temperature data produced by thermocouples TC23 and TC24 placed on the access panel door leaf, showed that the insulation criteria on the door leaf was only surpassed just before the 50-minute mark – due to the average temperature rise recorded on the leaf exceeding 140ºC. When the access panel size is increased to 600 mm × 600 mm, there is a risk of early insulation failure due to the larger exposed area. Based on the time vs temperature data on the door leaf from FP6372, and considering the safety margin of 20 minutes, it is reasonable to consider that the insulation performance of the 600 mm wide × 600 mm high FyreSHIELD access panel installed without the Rakbak will not be detrimentally affected for up to 30 minutes due to the absence of the Rakbak only. The integrity performance of the access panel in test FP6372 was 90 minutes.

It must be noted that the insulation criteria was exceeded at 17 minutes as the temperature on the access panel frame increased by more than 180ºC. However, this can be because of the absence of the fire-rated plasterboard build-up around the aperture and the PVC flange as the results in test FRT190298 demonstrate.

In test FRT190298, a 600 mm wide × 600 mm high FyreSHIELD access panel was tested in a Speedpanel wall. The panel leaf was on the unexposed side opening away from the furnace and the aperture was built up locally with 13 mm thick fire-rated plasterboard around the panel leaf. There was no insulation failure recorded on the frame. The insulation failure occurred at 49 minutes when the average temperature rise recorded on the leaf exceeded 140ºC. There was another failure at 70 minutes when the thermocouple located on the upper east quarter point of the door leaf recorded a temperature rise greater than 180ºC. Therefore, it is expected that the absence of the Rakbak will not detrimentally affect the insulation performance of the access panel up to 30 minutes.

In test FRT190298, the access panel without the Rakbak was tested opening away from the furnace. Exposure from the rear of the panel is considered to be more onerous as this causes the steel frame to be exposed to fire conditions which can result in heat conduction to the unexposed side. Therefore, the FRL assessed for hinged access panels without Rakbak opening away from the furnace can also be extended to panels without Rakbak opening into the furnace.

As the lockhole is no longer protected with a Rakbak, it must be lined with intumescent to eliminate the possibility of early integrity failure from flaming through the lockhole. The aperture around the panel leaf must be built up with 13 mm thick fire-rated plasterboard extending minimum 100 mm from the edge of the aperture. Trafalgar FyreFLEX™ sealant must be applied in the annular gap between the access panel frame and the wall to a depth of 10 mm and finished with a 10 mm fillet on the side of the FyreFrame. Sealant must also be applied to the back of the PVC flange. 10g × 100 mm needle point screws must be used to secure the access panel to the Pronto Panel™ at nominal 170 mm centres.

Screw-fixed access panels

Reference is made to specimens 3 and 4 of test report FSV2163 and to the specimen tested in FSP1307 as also discussed in section 6.3.1. As observed in these tests, the integrity performance of the screw-fixed 600 mm × 600 mm panels is expected to be maintained for the established integrity performance of the wall itself and so can be expected for up to 90 minutes in 60 mm thick Pronto Panel™ walls. Another point of vulnerability for integrity failure is the fixing between the panel and the separating element. It must be noted that the interface between the screw-fixed access panel and the Pronto Panel™ wall has not been tested. However, a comparison of the hinged and screw-fixed panels tested in the same plasterboard wall in FSV2163 shows that screw-fixed panels do not detrimentally affect the integrity or insulation performance of the system due to the differences of the panel composition or the fixing configuration. Therefore, as hinged panels were tested in Pronto Panel™ walls, it is expected that the integrity performance will not be affected if the panels were screw-fixed to the wall.

With regards to the insulation performance, in FRT200160, it was concluded that the insulation failure occurred at approximately 84 minutes due to the average temperature of the unexposed surface thermocouples recording a temperature of 157ºC. The tested access panel was hinged. It is evident from FSV2163 and from the discussion about the improved screw-fixed panel design in section 6.3.1 that, screw-fixed panels achieved a greater fire performance than hinged access panels of the same size. Therefore, screw-fixed access panels are expected to have an equal or better insulation performance, provided that the panels are modified as shown in Figure 11.

Therefore, 600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in 60 mm thick Pronto Panel™ walls with 100 mm wide strips of 13 mm thick plasterboard around the aperture are expected to achieve an FRL of up to -/90/90 when exposed to fire from either side. The assessed FRL is applicable to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side.

6.3.7 Hebel panel walls

It is proposed to assess the fire resistance performance of hinged and screw fixed FyreSHIELD access panels with maximum dimensions 600 mm × 600 mm in a minimum 75 mm thick Hebel panel wall or an AAC wall with an equal or greater density.

Hinged access panels

In test report FP6372, the tested assembly consisted of a nominal 460 mm × 460 mm opening cut through the 75 mm thick Hebel PowerPanel wall. The opening was lined around all four sides on the exposed side with 75 mm × 50 mm × 1.2 mm slotted angle, fixed in place with 8g × 65 mm CSK plasterboard screws. The hinged access panel was fitted from the unexposed side and held in position with 8g × 100 mm plasterboard screws at 300 mm centres. The annular gap between the access panel frame and Hebel PowerPanel was filled to the full depth of the wall with Trafalgar FyreFLEX™ sealant. When tested, the specimen continued to maintain integrity performance until 92 minutes. At this time, a cotton pad test was done on the face of the access panel as the MDF facing of the leaf ignited and was flaming for more than 10 seconds.

Insulation failure occurred at 17 minutes due to the maximum temperature rise exceeding the 180 K failure threshold on the frame of the access panel. Therefore, the tested FRL was -/90/-. However, the temperature vs time curve produced by thermocouples TC23 and TC24 placed on the access panel door leaf, showed that the insulation criterion on the door leaf was surpassed just before the 50-minute mark due to the average temperature recorded on the leaf exceeding 140ºC.

It is proposed that the construction in test FP6372 is assessed with variations listed in section 6.1 as pertaining to hinged access panels similar to the panels tested in FRT200160 and FRT200161 which were assessed for a fire resistance performance of -/90/60 for fire exposure from either direction as described in section 6.3.6.

The relevant variations include assessing the fire performance with and without the Rakbak, the use of FyreFrame which incorporates a 2 mm thick polymeric flange, the lock hole being lined with Gee Whiz intumescent to avoid any flaming on the unexposed side when Rakbak is not installed and the local thickening of the Hebel wall around the aperture. Additionally, fire-rated plasterboard can be installed around the aperture so that the frame does not protrude. It is also proposed to extend the fire resistance performance achieved in this test to cover aperture sizes up to 600 mm × 600 mm to accommodate a larger access panel.

Increasing the aperture in a wall system may be detrimental and may increase the chances of integrity failure. In FRT200160 and FRT200161, 600 mm × 600 mm FyreSHIELD access panels penetrating a 60 mm Pronto Panel™ were tested and assessed to achieve an FRL of -/90/60 for two-way exposure. The significance of this test result is that it confirms that, despite the reduced wall thickness and the larger aperture, no integrity failure around the perimeter of the access panel had been measured throughout the test period.

The proposed Hebel wall system is 75 mm thick which is greater than the thickness of the tested Pronto Panel™. The 75 mm thick Hebel wall is expected to provide a similar, if not greater, rigidity when exposed to fire conditions. Therefore, a similar integrity performance is expected to be achieved if the same access panel is tested in a 75 mm thick Hebel wall system. Therefore, it is considered that increasing the access panel size to 600 mm × 600 mm will not be detrimental to the integrity performance achieved and can be positively assessed for up to 90 minutes. To further ensure that integrity performance is maintained, Trafalgar FyreFLEX™ sealant must be applied around the perimeter of the aperture and to the back of the flange before inserting the panel into the wall, Gee Whiz intumescent strips must be added to the door seat and the annular gap must be maximum 10 mm. The fixings must also be maintained as tested.

As shown in FRT200160 and FRT200161, the addition of the Rakbak with the rockwool infill material will maintain the insulation performance of the access panel door leaf up to 60 minutes. Having a PVC flange on the side of the panel leaf will also contribute to the insulation performance by reducing the temperatures on the frame. Furthermore, local build-up of the separating element to ensure that the frame does not protrude will further improve its insulation performance. Therefore, the proposed variations are expected to enhance the insulation performance of the access panel tested in FP6372 for up to 60 minutes, based on the test performance in FRT200160 and FRT200161.

Based on the discussion above, it is expected that an FRL of -/90/60 can be achieved for fire exposure from either direction – in accordance with AS 1530.4:2014 – if the hinged 600 mm × 600 mm FyreSHIELD access panels, with the proposed variations and the Rakbak were installed in 75 mm thick Hebel PowerPanel walls.

It is also proposed to assess the expected fire resistance performance of the access panels without the Rakbak installed in Hebel PowerPanel walls. The access panel tested in FP6372 did not have a Rakbak. The insulation criteria was exceeded at 17 minutes as the temperature on the access panel frame increased by more than 180ºC. This may be because of the absence of the fire-rated plasterboard build-up around the aperture and the PVC flange as the results in test FRT190298 demonstrate.

This is also demonstrated in FRT180356 where specimen A consisted of a PVC flange on the unexposed face and specimen B consisted of a steel flange instead. Specimen A failed insulation at 57 minutes with the average temperature on the panel leaf exceeding the 140°C criteria and specimen B failed insulation at 25 minutes with the maximum temperature on the frame exceeding 180°C. This shows that having the PVC flange improves the insulation performance of the access panels without Rakbak.

Alternatively, the temperature vs time curve produced by thermocouples TC23 and TC24 placed on the access panel door leaf, showed that the insulation criterion on the door leaf was surpassed just before the 50-minute mark due to the average temperature recorded on the leaf exceeding 140ºC. Based on this observation, it is reasonable to consider that the insulation performance of the FyreSHIELD access panel installed without the Rakbak will not be detrimentally affected for up to 30 minutes due to the absence of the Rakbak only.

In test FP6372, the access panel without the Rakbak was tested opening away from the furnace. Exposure from the rear of the panel is considered to be more onerous as this causes the steel frame to be exposed to fire conditions which can result in heat conduction to the unexposed side. Therefore, the FRL assessed for hinged access panels without Rakbak opening away from the furnace can also be extended to panels without Rakbak opening into the furnace.

Based on the discussion above, it can be expected that an FRL of -/90/30 will be achieved for fire exposure from either direction – in accordance with AS 1530.4:2014 – if the hinged 600 mm × 600 mm FyreSHIELD access panels without the Rakbak were installed in 75 mm thick Hebel PowerPanel walls – with the variations as proposed.

As the lockhole is no longer protected with a Rakbak, it must be lined with intumescent to eliminate the possibility of early integrity failure from flaming through the lockhole. The aperture around the panel leaf must be built up with 13 mm thick fire-rated plasterboard extending minimum 100 mm from the edge of the aperture. Trafalgar FyreFLEX™ sealant must be applied in the annular gap between

the access panel frame and the wall. Sealant must also be applied to the back of the PVC flange. The access panels must be secured to the Hebel wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 170 mm centres.

Screw-fixed access panels

Based on the discussion above in section 6.3.6, 600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in 75 mm thick Hebel walls can be expected to achieve an FRL of up to -/90/90 when exposed to fire from either side. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side. There must be a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in Figure 11.

It must be noted that the interface between the screw-fixed access panel and the Hebel wall has not been tested. However, comparison of the hinged and screw-fixed panels tested in the same plasterboard wall in FSV2163 shows that screw-fixed panels do not detrimentally affect the integrity or insulation performance of the system. Therefore, as hinged panels were tested in Hebel walls, it is expected that the integrity performance will not be affected if the panels were screw-fixed to the wall. Hebel wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 170 mm centres.

6.3.8 AAC walls

It is proposed that the assessed performance of FyreSHIELD access panels in Hebel panel walls is extended to similar AAC walls. Provided that the dry density of the AAC panels is equal to or greater than the standard nominal density of Hebel panels at 650 kg/m^3, and the access panel is installed with the same specifications as required for Hebel panel walls, the fire resistance performance of hinged or screw-fixed access panels can be extended to all walls made of AAC panels.

6.3.9 Speedpanel walls

It is proposed to assess the fire resistance performance of hinged and screw fixed FyreSHIELD access panels with maximum dimensions 600 mm × 600 mm in a minimum 78 mm thick Speedpanel wall.

Hinged access panels

In test report FRT190298, the tested assembly consisted of a 78 mm thick Speedpanel wall system incorporating two penetration systems and a hinged access panel. The wall system was further thickened with one layer of 13 mm fire-rated plasterboard installed around the aperture on the unexposed side. The access panel was 585 mm wide × 585 mm high × 39 mm thick and opened away from the furnace. The access panel was fixed to the separating element with 10 g × 40 mm self-drilling screws at 200 mm centres. The panel core was 30 mm Maxilite board sandwiched between the MDF skin on the unexposed side and the fibre cement skin on the exposed side. Gee Whiz intumescent strips were fitted around the perimeter of the access panel. C-channels with dimensions 55 mm high × 82 mm wide × 1.15 BMT were used as the bottom and vertical tracks of the separating element and as the aperture capping for the access panel. The access panel system design was confirmed by the report sponsor to be FRC with FyreFrame. The specimen did not contain a Rakbak.

When tested, the access panel continued to maintain its integrity throughout the 121 minutes test without any sign of gaps or cracks forming that could have initiated an integrity failure.

To measure the insulation performance, thermocouples were placed on the separating element and the plasterboard strip (TC021-TC024), on the access panel frame (TC031-TC035) and on the access panel leaf (TC041-TC045). After reviewing the time vs temperature curves of these thermocouples, it was concluded that insulation failure occurred at approximately 49 minutes. This was because the average temperature recorded by the thermocouples placed on the unexposed surface of the panel leaf exceeded the 140ºC temperature rise criteria stipulated in Clause of 2.13.3(a) of AS 1530.4:2014.

It is proposed that the construction in this test is updated with the variations listed in section 6.1. The proposed variations includes the upgrade of the door panel to include the Rakbak. Based on FRT200161, this is expected to improve the overall insulation performance of the access panel, especially by reducing the temperature increase on the door panel leaf - maintaining the insulation performance for up to 60 minutes. The increase in the access panel from 585 mm^2 to 600 mm^2 is not expected to detrimentally affect the integrity or insulation performance of the access panels based on the tested systems in FRT200161.

Therefore, 600 mm wide × 600 mm high hinged FyreSHIELD access panels with Rakbak installed in 78 mm thick Speedpanel walls – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture – can be expected to achieve an FRL of -/120/60 when the access panel opens away from the furnace. The access panel must have a polymeric (or PVC) flange overlapping with the separating element.

It is also proposed to assess the expected fire resistance performance of the access panel without the Rakbak. In test report FRT190298, the FRC access panel consisted of a laminated 30 mm Maxilite core panel without the Rakbak. Since the insulation failure occurred at the 49-minute mark of the test because the average temperature on the panel leaf was greater than the allowable criteria of 140ºC, it is considered reasonable to consider that the insulation performance of 45 minutes can be maintained if the FyreSHIELD access panel is installed without the Rakbak, for an FRL of -/120/45. This is for when the access panel opens away from the furnace.

It is proposed to assess the fire performance of the access panels opening into the furnace based on test evidence in FRT200160. As assessed in section 6.3.6, the system in FRT200160 with the FyreSHIELD access panel with the Rakbak has been assessed for an FRL of -/90/60 and the access panel without the Rakbak has been assessed for an FRL of -/90/30. The same FRL can be extended to the Speedpanel wall provided that the construction details are maintained and that the Speedpanel wall has an established performance of at least 90 minutes integrity and 60 minutes of insulation.

The access panel must be fixed to the separating element with 10 g × 40 mm self-drilling screws at 200 mm centres.

Screw-fixed access panels

It is evident from FSV2163 and FSP1307 that the integrity performance of screw-fixed access panels can be expected to be maintained up to the established integrity performance of the separating element. Therefore, the integrity performance of the screw-fixed access panels in minimum 78 mm thick Speedpanel walls can be assessed up to 120 minutes.

For the insulation performance, as assessed in section 6.3.1, if the 600 mm × 600 mm screw-fixed access panels are installed in a separating element with an established FRL of -/120/120, the expected FRL of the access panel is determined to be -/120/120 when exposed to fire from either side – in accordance with AS 1530.4:2014. The polymeric flange design must be maintained as tested and overlapping with the separating element. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side. There must be a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in as shown in Figure 11. The access panel must be fixed to the separating element with 10 g × 40 mm self-drilling screws at 200 mm centres.

6.3.10 AlphaPanel walls

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panels up to 600 mm × 600 mm in three AlphaPanel wall configurations as follows:

- Configuration 1: Minimum 51 mm thick wall consisting of a 35 mm thick AlphaPanel cladded with one layer of 16 mm fire-rated plasterboard directly fixed to the AlphaPanel. Additionally, on the plasterboard face, the aperture must be built up with two layers of 16 mm thick fire-rated plasterboard extending minimum 100 mm in all directions from the aperture. The established FRL of the wall is -/90/90. See Figure 7.
- Configuration 2: Minimum 91 mm thick wall consisting of a 35 mm thick AlphaPanel with one layer of 16 mm fire-rated plasterboard fixed to furring channels connected to the AlphaPanel. The air cavity between the furring channels and the AlphaPanel is minimum 40 mm. Minimum 76 mm deep steel studs are installed on either side of the aperture to improve rigidity at the interface between the wall and the access panel. The aperture must be capped with fire-rated plasterboard. The established FRL of the wall is -/90/90. See Figure 8 and Figure 9.
  - For hinged access panels, the wall system must be built up with one layer of 16 mm thick fire-rated plasterboard on the plasterboard face extending minimum 100 mm in all directions from the aperture.
  - For screw-fixed access panels, the wall system must be built up with one layer of 16 mm thick fire-rated plasterboard on the plasterboard face extending minimum 100 mm in all directions from the aperture. Additionally, a local build-up of one layer of minimum 16 mm thick fire-rated plasterboard must be installed on the AlphaPanel face

extending minimum 100 mm in all directions from the aperture, covering the exposed flanges of the steel studs.

- Configuration 3: Wall consisting of two 35 mm thick AlphaPanels with an air gap or insulation in between. The aperture must be capped with fire-rated plasterboard. The established FRL of the wall is -/120/120. See Figure 10.

Configuration 1

The proposed wall configuration consists of a 35 mm AlphaPanel wall with an additional 16 mm thick plasterboard cladding directly fixed on the wall face (see Figure 6). It is similar to the Pronto Panel™ wall assessed in section 6.3.6.

The thickness of the AlphaPanel wall (with plasterboard cladding) is less than that of the Pronto Panel™ at 51 mm, but the aperture is further locally thickened with two layers of 16 mm thick fire-rated plasterboard on the plasterboard face, increasing the total wall thickness to 83 mm. This is greater than that of the assessed Pronto Panel™ which was 73 mm with a 13 mm thick local build up with fire-rated plasterboard around the aperture.

It is proposed that 600 mm wide × 600 mm high hinged and screw-fixed access panels are installed in the AlphaPanel wall, with the access panel door on the plasterboard clad face.

Reference is made to the discussion presented in section 6.3.6, where 600 mm wide × 600 mm high hinged FyreSHIELD access panels with Rakbak were assessed installed in 60 mm thick Pronto Panel™ walls – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture. The assessed FRL was -/90/60 when exposed to fire from each direction – in accordance with AS 1530.4:2014. The access panel must have a polymeric (or PVC) flange.

As assessed in section 6.3.6, hinged access panels without the Rakbak are expected to achieve -/90/30. As the lockhole is not protected with the Rakbak, it must be lined with intumescent to eliminate the possibility of early integrity failure with flaming through the lockhole.

Since the AlphaPanel wall is thinner than the Pronto Panel™ , it is expected that the wall will undergo greater deflections that contribute to unwarranted gap openings around the aperture at the access panel and wall interface. However, locally thickening around the aperture with a further 2 layers of 16 mm fire-rated plasterboard is expected to maintain the integrity and insulation performances by preventing localised heating up of the unexposed side around the aperture, ensuring that the frame of the access panel does not protrude out of the wall and by providing added stiffness around the aperture. Therefore, the same fire performance assessed in section 6.3.6 for Pronto Panel™ walls can be assessed for 600 mm wide × 600 mm hinged access panels installed in the proposed AlphaPanel wall.

Therefore, it is expected that 600 mm wide × 600 mm high screw-fixed FyreSHIELD access panels – with the proposed variations as outlined in section 6.1 – installed in the proposed AlphaPanel wall configuration and the aperture built up with fire-rated plasterboard extending minimum 100 mm in all directions from the aperture – can be assessed an FRL of -/90/60 with the Rakbak and -/90/30 without the Rakbak.

For screw-fixed access panels, reference is made to specimens 3 and 4 of test report FSV2163 and also to FSP1307. As observed in FSV2163 and in FSP1307, the integrity performance of the screw-fixed 600 mm × 600 mm panels is expected to be maintained for the established integrity performance of the wall itself and so can be expected to be up to 90 minutes for the AlphaPanel walls.

As discussed for the Pronto Panel™ walls , the insulation performance is expected to be maintained for 90 minutes with the local thickening of the aperture to form an overall wall thickness of 73 mm. With the proposed AlphaPanel configuration, the total thickness is greater than that proposed for the Pronto Panel™ as the wall is further thickened with two layers of 16 mm fire-rated plasterboard around the aperture. Therefore, a similar insulation performance can be expected to be maintained in the proposed AlphaPanel wall.

Therefore, 600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in the proposed AlphaPanel wall configuration – and the aperture built up with fire-rated plasterboard extending minimum 100 mm in all directions from the aperture can be expected to achieve an FRL of up to -/90/90 when exposed to fire from either side. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in Figure 11.

The above FRLs apply to fire exposure from either side of the wall and with the access panel opening into or away from the furnace. Trafalgar FyreFLEX™ sealant must be applied in the annular gap between the access panel frame and the wall. Sealant must also be applied to the back of the PVC flange. The access panels must be secured to the AlphaPanel wall using 6 mm concrete/masonry screw at maximum nominal 150 mm centres.

Configuration 2

The proposed wall configuration consists of a 35 mm thick AlphaPanel wall and 16 mm thick fire-rated plasterboard cladding on steel furring channels with a minimum 40 mm air cavity between the AlphaPanel and the plasterboard layer. The aperture is locally thickened on the plasterboard face with one layer of 16 mm fire-rated plasterboard, extending minimum 100 mm in all directions from the aperture. Minimum 76 mm deep steel studs are installed on all four sides of the aperture to improve rigidity at the interface between the wall and the access panel. The aperture must be capped with fire-rated plasterboard.

Due to the increase of the overall wall thickness, presence of the steel furring channels to which the plasterboard is fixed, the local aperture build-up with one layer of 16 mm thick fire-rated plasterboard and the 40 mm air cavity, it is expected that this proposed AlphaPanel wall configuration will have a similar or better FRL as wall configuration 1 discussed above (minimum 83 mm thick AlphaPanel wall). The established FRL of wall configuration 2 is also -/90/90. Therefore, the same discussion as for wall configuration 1 can be applied to wall configuration 2 and the integrity performance of 600 mm × 600 mm hinged and screw-fixed access panels.

It must be noted that the minimum 76 mm deep steel studs installed on the four sides of the aperture extend beyond the wall cavity and overlap with the AlphaPanel in configuration 2. This causes the flange of the stud to be placed on the outer face of the AlphaPanel. Therefore, the insulation performance of hinged and screw-fixed access panels in the configurations given in Figure 8 and Figure 9 are discussed separately. Reference is made to the tests FRT200160, FRT200161, FSV2163 and assessment discussions in sections 6.3.1 to 6.3.9. The insulation performance of the access panel will be limited by the performance of the access panel itself, or the performance of the separating element – whichever is lower.

In Figure 8, when exposed to fire from the plasterboard side, the steel stud will act as a medium for local heat conduction after the plasterboard cladding falls off and the stud is exposed to the fire. This would lead to an increase in the unexposed side temperatures (ie the AlphaPanel face) as thermocouples are likely to be placed on the heated steel stud leading to early insulation failure. Generally, it is considered that 16 mm thick fire-rated plasterboard exposed to furnace conditions do not fall off until at least 30 minutes. Therefore, it is expected that the steel stud would not be exposed directly to the fire conditions until at least 30 minutes and the insulation performance of the wall system at the aperture can be expected to be maintained for at least 30 minutes.

When exposed from the side of the AlphaPanel, it is again expected that the insulation of the wall system can be maintained for at least 30 minutes as the unexposed side now has one layer of 16 mm thick fire-rated plasterboard.

As assessed for Pronto Panels™, when a 600 mm × 600 mm hinged FyreSHIELD access panel with polymeric flange is installed, the assessed insulation performance is 60 minutes with Rakbak and 30 minutes without Rakbak. However, this will be limited by the assessed insulation performance of the wall system shown in Figure 8.

Therefore, if a 600 mm × 600 mm hinged FyreSHIELD access panel with or without Rakbak is installed in the proposed AlphaPanel configuration (with the studs around the aperture overlapping the AlphaPanel not protected), the system is expected to maintain the insulation performance for up to 30 minutes. As a result, it is expected that the FRL that can be achieved by this system will be -/90/30.

If the overlapping studs were covered with a minimum 16 mm thick fire-rated plasterboard extending minimum 100 mm around the aperture as shown in Figure 9, it is expected that the insulation performance of the wall system will be as per the established insulation performance which is -/90/90. As discussed for the Pronto Panel™ walls, the insulation performance is expected to be maintained for 90 minutes with the local thickening of the aperture to form an overall wall thickness of 73 mm. With the proposed AlphaPanel configuration, the total thickness is greater than that proposed for the Pronto Panel™ as the wall is further thickened with one layer of 16 mm fire-rated plasterboard around the aperture. Therefore, a similar insulation performance can be expected to be maintained in the proposed AlphaPanel wall where the studs are covered with 100 mm wide strips of plasterboard.

When exposed to fire from the AlphaPanel side, the steel stud is expected to conduct heat to the plasterboard cladding and may detrimentally affect the plasterboard fall-off time. However, with an additional layer of plasterboard covering the steel studs, the time taken to increase the temperatures on the unexposed face beyond the insulation threshold of 180ºC is not expected to be reduced to less than 60 minutes in either direction.

Therefore, if a 600 mm × 600 mm hinged FyreSHIELD access panel with Rakbak is installed in this proposed AlphaPanel configuration (with the studs around the aperture overlapping the AlphaPanel covered with 16 mm fire-rated plasterboard), the system is expected to maintain the insulation performance for up to 60 minutes. As a result, it is expected that the FRL that can be achieved by this system will be -/90/60.

If a 600 mm × 600 mm hinged FyreSHIELD access panel without Rakbak is installed in this proposed AlphaPanel configuration (with the studs around the aperture overlapping the AlphaPanel covered with 16 mm fire-rated plasterboard), the system is expected to maintain the insulation performance for up to 30 minutes. As a result, it is expected that the FRL that can be achieved by this system will be -/90/30.

Similarly, 600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in the proposed AlphaPanel wall configuration in Figure 9 – and the aperture built up with fire-rated plasterboard extending minimum 100 mm in all directions from the aperture – can be expected to achieve an FRL of up to -/90/90 when exposed to fire from either side. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in Figure 11.

The above FRLs apply to fire exposure from either side of the wall and with the access panel opening into or away from the furnace. Trafalgar FyreFLEX™ sealant must be applied in the annular gap between the access panel frame and the wall. Sealant must also be applied to the back of the PVC flange. The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres.

Configuration 3

The proposed wall configuration consists of two layers of 35 mm thick AlphaPanels with an air gap or optionally, cavity insulation in between. If the cavity in between the panels is less than 46 mm, the aperture is locally thickened on the plasterboard face with one layer of 16 mm fire-rated plasterboard, extending minimum 100 mm in all directions from the aperture. Steel studs suited to the cavity are installed on all four sides of the aperture to improve rigidity at the interface between the wall and the access panel. The aperture must be capped with fire-rated plasterboard. The established FRL of wall configuration 2 is -/120/120.

Reference is made to the discussions presented for flexible wall systems with two layers of plasterboard on both sides in section 6.3.1. As the established FRLs of the two types of wall are the same, with the AlphaPanel configuration being more rigid, it is expected that the FRLs assessed for hinged and screwed-fixed access panels in section 6.3.1 can be extended to hinged and screw-fixed access panels in this proposed Alpha Panel configuration as well. Furthermore, when the overall AlphaPanel wall thickness is less than 116 mm, fire-rated plasterboard must be installed extending minimum 100 mm from the aperture to bring the total thickness to minimum 116 mm.

Therefore, when installed in AlphaPanel wall configuration 3, hinged access panels with Rakbak can be expected to achieve an FRL of -/120/60, hinged access panels without Rakbak can be expected to achieve an FRL of -/120/30 and screw-fixed access panels can be expected to achieve an FRL of -/120/120. These FRLs apply to 600 mm × 600 mm access panels.

The above FRLs also apply to fire exposure from either side of the wall and with the access panel opening into or away from the furnace. Trafalgar FyreFLEX™ sealant must be applied in the annular gap between the access panel frame and the wall. Sealant must also be applied to the back of the PVC flange. The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres.

6.3.11 A1 Corex shaft walls

It is proposed to assess the fire resistance performance of hinged FyreSHIELD access panels up to 600 mm × 600 mm in three A1 Corex shaft wall configurations (shown in Figure 12) as follows:

- Configuration 1: Two layers of 15 mm thick A1 Corex fire-rated boards on one side of the steel framework. The aperture must be built up with three layers of 15 mm thick A1 Corex (or equivalent) extending minimum 100 mm from the edge of the aperture in all direction to bring the total local thickness to 75 mm. The studs and screws connecting the stud and the access panels must be boxed with minimum 25 mm thick A1 Corex fire-rated board. The established FRL of the wall is -/60/60.
- Configuration 2: Two layers of 20 mm thick A1 Corex fire-rated boards on one side of the steel framework. The aperture must be built up with two layers of 20 mm thick A1 Corex (or equivalent) extending minimum 100 mm from the edge of the aperture in all direction to bring the total local thickness to 80 mm. The studs and screws connecting the stud and the access panels must be boxed with minimum 25 mm thick A1 Corex fire-rated board. The established FRL of the wall is -/90/90.
- Configuration 3: Two layers of 25 mm thick A1 Corex fire-rated boards on one side of the steel framework. The aperture must be built up with one layer of 25 mm thick A1 Corex (or equivalent) extending minimum 100 mm from the edge of the aperture in all direction to bring the total local thickness to 75 mm. The studs and screws connecting the stud and the access panels must be boxed with minimum 25 mm thick A1 Corex fire-rated board. The established FRL of the wall is -/120/120.

Configuration 1

The proposed wall configuration consists of two layers of 15 mm thick A1 Corex boards on one side of a 64 mm deep steel framework. The other side of the steel studs is not cladded. The side with the Corex boards is further thicknessed with three layers of minimum 15 mm thick Corex (or equivalent) extending minimum 100 mm in all directions from the aperture to bring the total board thickness to 75 mm at the aperture. The established FRL of this wall configuration is -/60/60.

Reference is made to tests FRT200160 and FRT200161 in Pronto Panels™, FRT190298 in Speedpanel walls and FSV2163 in plasterboard walls as well as assessment discussions in sections 6.3.1 to 6.3.9. The integrity and insulation performances of the access panels will be limited by the performance of the access panel itself, or the performance of the separating element – whichever is lower.

The interface details are similar to that for the plasterboard walls as tested in FRT180356 or FSV2163 with the access panel frame fixed to the steel stud with plasterboard screws.

For the insulation performance, the important factors to be considered include the insulation performance of the access panel and the insulation performance of the wall system with the access panel installed – including variations detailed in section 6.1.

When exposed to fire from the side with A1 Corex boards, it is expected that the system will be able to maintain the integrity and insulation performance up to 60 minutes for hinged access panels with Rakbak and integrity of 60 minutes and insulation of 30 minutes for hinged access panels without Rakbak.

When exposed to fire from the side with the exposed steel studs, it is expected that the unprotected studs and screws will conduct heat rapidly to the access panel frame and cause an integrity and insulation failure prior to 30 minutes. To prevent this, the studs and the screws must be boxed with minimum 25 mm thick Corex boards as shown in Figure 12. This will provide a comparative performance to FSV2163 where two layers of 13 mm thick fire-rated plasterboard was cladded on both sides of the stud. Furthermore, a fillet of sealant must be applied between the access panel frame and the Corex board lined studs as shown in Figure 12.

Similarly, 600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in the proposed wall configuration – with the aperture built up with Corex board extending minimum 100 mm in all directions from the aperture and the studs boxed with minimum 25 mm Corex boards – can be expected to achieve an FRL of up to -/60/60 when exposed to fire from either side. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in Figure 11.

Therefore, when installed in A1 Corex shaft wall configuration 1, hinged access panels with Rakbak can be expected to achieve an FRL of -/60/60, hinged access panels without Rakbak can be expected to achieve an FRL of -/60/30 and screw-fixed access panels can be expected to achieve an FRL of -/60/60. These FRLs apply up to 600 mm × 600 mm access panels. The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres.

Configuration 2

The proposed wall configuration consists of two layers of 20 mm thick A1 Corex boards on one side of a 64 mm deep steel framework. The other side of the steel studs is not cladded. The side with the Corex boards is further thicknessed with two layers of minimum 20 mm thick Corex (or equivalent) extending minimum 100 mm in all directions from the aperture to bring the total board thickness to 80 mm at the aperture. The established FRL of this wall configuration is -/90/90.

Reference is made to tests FRT200160 and FRT200161 in Pronto Panels™, FRT190298 in Speedpanel walls and FSV2163 in plasterboard walls as well as assessment discussions in sections 6.3.1 to 6.3.9. The integrity and insulation performances of the access panels will be limited by the performance of the access panel itself, or the performance of the separating element – whichever is lower.

As discussed previously, when exposed to fire from the side with A1 Corex boards, it is expected that the system will be able to maintain integrity for 90 minutes and insulation up to 60 minutes for hinged access panels with Rakbak and integrity for 90 minutes and insulation of 30 minutes for hinged access panels without Rakbak.

When exposed to fire from the side with the exposed steel studs, it is expected that the unprotected studs and screws will conduct heat rapidly to the access panel frame and cause an integrity and insulation failure prior to 30 minutes. To prevent this, the studs and the screws must be boxed with minimum 25 mm thick Corex boards as shown in Figure 12. This will provide a comparative performance to FSV2163 where two layers of 13 mm thick fire-rated plasterboard was cladded on both sides of the stud. Furthermore, a fillet of sealant must be applied between the access panel frame and the Corex board lined studs as shown in Figure 12.

Similarly, 600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in the proposed wall configuration – with the aperture built up with Corex board extending minimum 100 mm in all directions from the aperture and the studs boxed with minimum 25 mm Corex boards – can be expected to achieve an FRL of up to -/90/90 when exposed to fire from either side. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in Figure 11.

Therefore, when installed in A1 Corex shaft wall configuration 1, hinged access panels with Rakbak can be expected to achieve an FRL of -/90/60, hinged access panels without Rakbak can be expected to achieve an FRL of -/90/30 and screw-fixed access panels can be expected to achieve an FRL of -/90/90. These FRLs apply to 600 mm × 600 mm access panels. The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres.

Configuration 3

The proposed wall configuration consists of two layers of 25 mm thick A1 Corex boards on one side of a 64 mm deep steel framework. The other side of the steel studs is not cladded. The side with the Corex boards is further thicknessed with one layer of minimum 25 mm thick Corex (or equivalent) extending minimum 100 mm in all directions from the aperture to bring the total board thickness to 80 mm at the aperture. The established FRL of this wall configuration is -/120/120.

Reference is made to tests FRT200160 and FRT200161 in Pronto Panels™, FRT190298 in Speedpanel walls and FSV2163 in plasterboard walls as well as assessment discussions in sections 6.3.1 to 6.3.9. The integrity and insulation performances of the access panels will be limited by the performance of the access panel itself, or the performance of the separating element – whichever is lower.

As discussed previously, when exposed to fire from the side with A1 Corex boards, it is expected that the system will be able to maintain integrity for 120 minutes and insulation up to 60 minutes for hinged access panels with Rakbak and integrity for 120 minutes and insulation of 30 minutes for hinged access panels without Rakbak.

When exposed to fire from the side with the exposed steel studs, it is expected that the unprotected studs and screws will conduct heat rapidly to the access panel frame and cause an integrity and insulation failure prior to 30 minutes. To prevent this, the studs and the screws must be boxed with minimum 25 mm thick Corex boards as shown in Figure 12. This will provide a comparative performance to FSV2163 where two layers of 13 mm thick fire-rated plasterboard was cladded on both sides of the stud. Furthermore, a fillet of sealant must be applied between the access panel frame and the Corex board lined studs as shown in Figure 12.

Similarly, 600 mm × 600 mm screw-fixed FyreSHIELD access panels installed in the proposed wall configuration – with the aperture built up with Corex board extending minimum 100 mm in all directions from the aperture and the studs boxed with minimum 25 mm Corex boards – can be expected to achieve an FRL of up to -/120/120 when exposed to fire from either side. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side and a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in Figure 11.

Therefore, when installed in A1 Corex shaft wall configuration 1, hinged access panels with Rakbak can be expected to achieve an FRL of -/120/60, hinged access panels without Rakbak can be expected to achieve an FRL of -/120/30 and screw-fixed access panels can be expected to achieve an FRL of -/120/120. These FRLs apply to 600 mm × 600 mm access panels. The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres.

6.3.12 Concrete / masonry walls

Hinged and screw-fixed access panels in minimum 116 mm thick concrete / masonry walls

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panels up to 600 mm × 600 mm installed in a minimum 116 mm thick concrete / masonry wall system. It is also proposed that the access panels are assessed with the variations listed in section 6.1.

In accordance with clause 10.12.2 (c) of AS 1530.4:2014, results obtained for a system in framed walls can be applied to the performance of that system in concrete / masonry walls of greater or equal thickness to the tested framed wall. Therefore, the FRLs assessed for hinged and screw-fixed FyreSHIELD access panels in 116 mm thick plasterboard walls as discussed in section 6.3.1 are also considered to apply to concrete / masonry walls with minimum thickness 116 mm. The access panels must be secured to the concrete / masonry wall with minimum 6 mm expanding masonry anchors at nominal maximum 200 mm centres.

Screw-fixed access panels in minimum 230 mm thick concrete / masonry walls

It is also proposed to assess the fire resistance performance of screw-fixed FyreSHIELD access panels up to 740 mm × 740 mm when installed in a minimum 230 mm thick concrete / masonry wall.

In test FSP1307, the tested screw-fixed access panel measured nominally 740 mm high × 740 mm wide × 68 mm thick and was installed in a 1150 mm × 1150 mm × 230 mm masonry wall. The access panel was fabricated using a 60 mm thick Maxilite board core faced with 4 mm thick MDF board. The MDF face sheeting was fixed to the Maxilite core using a contact adhesive. It was fitted into the perimeter frame allowing a 5 mm clearance on all sides. The access panel was fixed into the steel perimeter frame using 100 mm long countersunk head M6 bolts fitting into the frame mounted M6 speed nuts at nominally 250 mm centres. Lorient HP4002 intumescent sealant was located between the edge of the access panel and the perimeter frame on all four sides of the panel.

The tested system failed the insulation criteria in accordance with clause 2.13.3 (b) of AS 1530.4:2014 when the maximum temperature rise exceeded 180ºC on the unexposed face of the perimeter frame at 20 minutes. The integrity performance was maintained for the duration of the test. The average temperature rise measured by the thermocouples on the unexposed face of the access panel did not exceed the average rise limit of 140ºC or the maximum limit of 180ºC at the time of test termination. The specimen achieved an FRL of -/240/-.

Time vs temperature data obtained from the thermocouples on the unexposed face of the access panel in FSP1307 show that the temperature on the access panel leaf on the unexposed side remained less than 100ºC for up to 175 minutes. Also, the temperature rise on the separating element adjacent to the perimeter frame exceeded 180ºC at 67 minutes.

It is proposed that the access panel consists of a steel frame with a polymeric flange (flanged edge (FE) frame type) instead of the tested steel flange. This is similar to the specimen in FSV2163 where PVC flange equal angles were fixed to the front of the steel access panel frame to form a flange.

Specimens 3 and 4 of FSV2163 showed that, with the polymeric flanged frame, the temperature increase on the frame itself can be maintained to be less than the insulation failure threshold for up to 120 minutes when the polymeric flange is on the unexposed side. As discussed above, with the additional variation to the screw-fixed panels, the insulation performance can be expected to extend to 120 minutes when exposed to fire from either side. The early insulation failure on the separating element is also expected to be delayed due to lower temperatures on the polymeric flange and will be limited by the established insulation performance of the wall. The integrity performance is not expected to be detrimentally affected with the change in the frame.

As the polymeric flange has not been tested for up to 240 minutes and changes to its material properties at high temperatures are unknown, the integrity performance of the panels is reduced to 120 minutes.

Therefore, 740 mm × 740 mm screw-fixed FyreSHIELD access panels installed in 230 mm thick masonry walls are expected to achieve an FRL of -/120/120 with the polymeric flange on both the exposed and unexposed sides – in accordance with AS 1530.4:2014. The assessed FRL applies to panels with either flanged edge polymeric frame or with perforated polymeric frame overlapping the separating element on one side. There must be a flanged edge polymeric flange with intumescent backing overlapping the steel pan on the other side as shown in Figure 11.

It is proposed that the assessed performance in masonry walls is extended to concrete walls with minimum thickness 230 mm. In accordance with clause 10.12.2 of AS 1530.4:2014, for elements manufactured from similar types of concrete or masonry can be applied to separating elements made of materials of density within ±15% of the tested separating element. Therefore, the assessed FRL applies to concrete walls with minimum thickness 230 mm.

The access panels must be secured to the concrete / masonry wall with minimum 6 mm expanding masonry anchors at nominal maximum 200 mm centres and the interface details must be as tested in FSP1307.

6.3.13 Floor / ceilings with 3 × 16 mm thick plasterboard layers

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panels up to 600 mm × 600 mm for an FRL up to -/120/120 when installed in a floor / ceiling system with three layers of 16 mm thick fire-rated plasterboard on the exposed side.

Fire exposure from below

In test report TR-F48.01, the tested hinged Trafalgar FyreSHIELD PLUS access panel (specimen A) measured 600 mm × 600 mm, penetrating a suspended floor / ceiling system measuring 1600 mm × 1600 mm × 352 mm. The ceiling system consisted of three layers of 16 mm Knauf FireShield with offset joints by 400 mm on each layer. It also consisted of 125 mm hardwood floor joists evenly spaced at maximum 450 mm centres and 19 mm yellow tongue flooring on top.

The access panel was installed into the ceiling using 8 g × 65 mm needle point bugle head screws through each side of the frame of the hatch into the steel furring channel on two sides and the top cross rails on the other two sides.

The access panel had a 30 mm Maxilite board (density 300 kg/m^3) panel core. The unexposed face of the panel was fibre cement board (density 1350 kg/m^3) 585 mm × 585 mm and there was a medium density fibreboard (MDF with density 870 kg/m^3) on the exposed face. The steel back pan was 0.5 mm thick galvanised steel that housed the mineral wool infill (80 kg/m^3 rockwool) 25 mm thick (Rakbak). The access panel frame was 1.1 mm galvanised mild steel with an all-steel Trafalgar FR hinge set, installed at nominal 100 mm, 300 mm and 500 mm from the bottom of the panel leaf to the centre of the hinge. Nominal 5 mm gaps were cut around the back pan and mineral wool infill to accommodate the hinges. The lockset was a Trafalgar FR budget lock 85 mm long × 25 mm wide galvanised mild steel. The access panel had a 41 mm × 25 mm × 2 mm thick PVC flange fixed to the frame with 3.9 mm steel rivets, located at nominal 240 mm centres. The access panel opened into the furnace.

The integrity and insulation performances were maintained for the duration of the test with no failure at 122 minutes. The resistance to incipient spread of fire criteria (RISF) failure occurred at 72 minutes, in accordance with clause 4.9.2 of AS 1530.4:2014 when the maximum temperature of thermocouples

around the perimeter hatch frame exceeded 250ºC. Therefore, the system achieved an FRL of -/120/120 and an RISF of 60 minutes.

It must be noted that the test described in TR-F48.01 was a pilot scale test, and so additional deflections and gap openings in a full-scale separating element have not been captured. Therefore, for the assessed system, the separating element must have an established FRL of at least -/120/120 and an RISF of 60 minutes, as tested or assessed by an accredited testing laboratory.

It is proposed that screw-fixed FyreSHIELD access panels with a 60 mm thick Maxilite core, 4 mm MDF facings on both sides, and polymeric perforated flanges (for wet wall application) or polymeric flanged edge frames are installed. If the floor / ceiling system with three layers of 16 mm thick fire-rated plasterboard has an established performance of -/120/120, the integrity and insulation performances are not expected to be detrimentally affected from that assessed for hinged access panels. This is based on the assessment of screw-fixed panels in plasterboard walls as discussed in 6.3.1.

It must be noted that screw-fixed access panels have not been tested in the horizontal orientation in floor / ceiling systems. However, the observed performance from the hinged access panels can be used as a reference since – as seen in FSV2163 – screw-fixed panels perform similarly or better than hinged panels in the same orientation and separating element. This variation is also not expected to affect the RISF of the ceiling system. The separating element must have an established FRL of at least -/120/120 and an RISF of 60 minutes, as tested or assessed by an accredited testing laboratory.

Fire exposure from above

It is also proposed that the fire exposure of the access panel and floor / ceiling system is assessed to be from above. In this case, the flooring on top of the ceiling system must be concrete or AAC which is not expected to degrade or consumed when exposed to fire.

When exposed to fire from above, the ceiling system will tend to deflect upwards towards the fire, which will be counteracted by the effects of gravity. This means that the resultant deflections would be lower which is not expected to affect the integrity performance. The temperatures measured on the unexposed face, on the outermost layer of the three-layers of fire-rated plasterboard, are also expected to remain lower for the duration of 120 minutes, provided that the fire has not entered into the ceiling cavity. This is because, in the referenced test the plasterboard layers were able to maintain the required insulation performance when directly exposed. Furthermore, the performance of the access panel has been established in the referenced test, and the same performance can be expected when exposed from the other side.

However, the ceiling system cannot be assessed a period of RISF as the increase in the cavity temperature can be expected to be greater than 250°C as no protection is provided by the plasterboard layers similar to the tested system. For hinged panels, it is expected that the same integrity and insulation performance as assessed for fire exposure from below can be expected to be maintained if a fire were to occur from above the floor / ceiling system – provided that the flooring on top is a rigid system.

Therefore, 600 mm wide × 600 mm high hinged FyreSHIELD access panels with Rakbak installed in floor / ceiling system with three layers of 16 mm thick fire-rated plasterboard on the unexposed side – can be expected to achieve an FRL of -/120/120 and RISF of 60 minutes when exposed to fire from above.

600 mm wide × 600 mm high screw-fixed FyreSHIELD access panels installed in floor / ceiling system with three layers of 16 mm thick fire-rated plasterboard on the unexposed side and concrete or AAC flooring on the exposed side (top) – can also be expected to achieve an FRL of -/120/120 and RISF of 60 minutes when exposed to fire from above – similar to the performance assessed for fire exposure from below based on the same discussion.

The construction details of the access panel must be as tested in TR-F48.01.

6.3.14 Floor / ceilings with 2 × 16 mm or 2 × 13 mm thick plasterboard layers

Hinged and screw-fixed access panels

It is proposed to assess the fire resistance performance of hinged and screw-fixed FyreSHIELD access panels up to 600 mm × 600 mm fixed with 10 g × 100 mm screws at 250 mm centres for an FRL up to -/60/60 when installed in a floor / ceiling system with two layers of 16 mm thick or 13 mm thick fire-rated plasterboard on the exposed side.

In test report TR-F48.01 a 600 mm × 600 mm hinged access panel was tested penetrating a floor / ceiling system with three layers of 16 mm thick plasterboard on the exposed side. The test showed that the access panel itself did not show any integrity or insulation failure for 122 minutes. The RISF criteria failed when the maximum temperature of thermocouples around the perimeter hatch frame exceeded 250ºC at 72 minutes. Therefore, the fire performance of the access panel can be established from test TR-F48.01.

The failure of the access panel penetrating the proposed floor / ceiling system in terms of integrity, insulation and RISF, will be governed by the established fire performance of the separating element itself. Test report FSH0597 details a test conducted on a loadbearing floor / ceiling system consisting of timber floor frame and suspended plasterboard ceiling. The suspended ceiling used two different plasterboard systems. The suspension frame assembled from Rondo 129 furring channels and Rondo 128 top cross rails, was suspended using suspension brackets nailed into the timber joists. A common upper layer of 13 mm thick fire-rated plasterboard was fixed to the furring channels using 30 mm screws at 200 mm centres in the field and 150 mm centres along butt joints.

The lower layers of 13 mm or 16 mm thick fire-rated plasterboard were screwed to the upper layer of plasterboard and into the furring channels using 40 mm screws at the same centres as the upper layer. The dimensions of the 13 mm lower layer section were nominally 2600 mm wide × 4540 mm long (13 mm / 13 mm system) while the 16 mm section was nominally 1040 mm wide × 4540 mm long (13 mm / 16 mm system). A uniformly distributed load was applied onto the ceiling system, however the structural adequacy is not considered in this assessment.

The entire ceiling system (both 13 mm / 13 mm system and 13 mm / 16 mm system) showed no integrity or insulation failure at 63 minutes. The RISF criteria for the 13 mm / 13 mm system was not exceeded for 55 minutes and it was maintained for 63 minutes for the 13 mm / 16 mm system.

If the thickness of the upper layer is further increased by 3 mm so that the thickness of both plasterboard layers is 16 mm, it is expected to be equally or less onerous than the tested 13 mm / 16 mm system. Therefore, based on the results from test report FSH0597, a floor / ceiling system with two layers of 16 mm thick fire-rated plasterboard layers on the exposed side will achieve an FRL of -/60/60 and an RISF of 60 minutes. This means that, if the 600 mm × 600 mm hinged access panels tested in TR-F48.01 is installed in the proposed ceiling system, the separating element is not expected to affect the fire performance of the access panel up to 60 minutes in integrity, insulation or RISF.

Additionally, based on the discussion presented in section 6.3.13, if the floor / ceiling system with two layers of fire-rated plasterboard has an established FRL of -/60/60, the integrity and insulation performance of screw-fixed access panels is expected to be -/60/60.

It is also proposed that the fire exposure to the access panel and floor / ceiling system is assessed to be from above. Considering the discussion presented in section 6.3.13 regarding the three-layer system, it is expected that the same integrity and insulation performance can be expected to be maintained if a fire were to occur above the floor / ceiling system – provided that the flooring on top is concrete or AAC. However, a period of RISF cannot be assessed.

Therefore, 600 mm wide × 600 mm high hinged FyreSHIELD access panels with Rakbak installed in floor / ceiling system with two layers of 16 mm thick fire-rated plasterboard on the exposed side – can be expected to achieve an FRL of -/60/60 and RISF of 60 minutes when exposed to fire from below and an FRL of -/60/60 when a fire occurs from above.

600 mm wide × 600 mm high hinged FyreSHIELD access panels with Rakbak installed in floor / ceiling system with two layers of 13 mm thick fire-rated plasterboard on the exposed side – can be expected to achieve an FRL of -/60/60 and RISF of 45 minutes when exposed to fire from below and an FRL of -/60/60 when a fire occurs from above.

The construction details of the access panel must be as tested in TR-F48.01.

600 mm wide × 600 mm high screw-fixed FyreSHIELD access panels installed in floor / ceiling system with two layers of 16 mm thick fire-rated plasterboard on the exposed side – can be expected to achieve an FRL of -/60/60 and RISF of 60 minutes when exposed to fire from below and an FRL of -/60/60 when a fire occurs from above.

600 mm wide × 600 mm high screw-fixed FyreSHIELD access panels installed in floor / ceiling system with two layers of 13 mm thick fire-rated plasterboard on the exposed side – can be expected to achieve an FRL of -/60/60 and RISF of 45 minutes when exposed to fire from below and an FRL of -/60/60 when a fire occurs from above.

6.4 Timber framing instead of steel framing for ceiling system

It is proposed that – in floor / ceiling systems assessed with hinged and screw-fixed access panels installed – the suspended ceiling grid is made of timber framing instead of steel furring channels as tested in TR-F48.01. The timber joists will be maintained as tested at the same minimum depth and spacing.

The vulnerability of the fixings between the plasterboard layers and the timber ceiling grid is increased by the loss in effective residual timber cross-section due to charring when exposed to a standard fire. This could result in premature integrity and insulation failure due to plasterboard fall-off. It is considered that the temperature at which the charring of timber begins is 300°C in accordance with BS EN 13381-7:2019[8]. In test TR-F48.01 with three layers of 16 mm fire-rated plasterboard, the RISF criteria did not exceed up until 72 minutes which means that the maximum temperature in the cavity of the ceiling system was maintained below 250ºC for up to 72 minutes.

For the three-layer ceiling system – provided that the established FRL of the ceiling system is equivalent or greater than -/120/120 and RISF of minimum 60 minutes as tested or assessed by an accredited testing laboratory – it is not expected that charring of the timber grid would occur for up to 60 minutes due to the presence of the access panel and so the plasterboard layers will continue to remain in place, showing a similar performance to the specimen in TR-F48.01. After 60 minutes, the timber battens will begin to char which can be detrimental to the plasterboard screw fixings. Therefore, to prevent the dislodgment of the screws for up to 120 minutes so that the plasterboard layers can continue to maintain integrity and insulation of the system, the timber battens must be minimum 70 mm × 35 mm and the total plasterboard screw length must be minimum 80 mm to ensure that sufficient embedment will be maintained for 120 minutes. This screw fixing length should be maintained for minimum 200 mm in all directions from the aperture.

For the two-layer systems, reference is made to test FSH0597 which was a suspended ceiling system with no penetrations. The RISF criteria for the 13 mm / 13 mm system was not exceeded up to 55 minutes and it was maintained for 63 minutes for the 13 mm / 16 mm system. This means that the timber battens around the access panels are not expected to char up to this time. Therefore, provided that the ceiling system has an established FRL of -/60/60 and established RISF of minimum 45 minutes for 2 × 13 mm layer systems and 60 minutes for 2 × 16 mm layer systems, it is not expected that installing the access panel will detrimentally affect this performance.

Furthermore, the aperture must be capped with one layer of minimum 13 mm or 16 mm fire-rated plasterboard (to match the ceiling specifications) to delay the charring of timber battens adjacent to the access panel frame which conducts heat into the ceiling cavity and to delay any local RISF failure near the interface between the access panel frame and the separating element.

The main structural framing to which the suspended ceiling grid is fixed will be maintained as timber joists. The construction details of the access panel must be as tested in TR-F48.01.

6.5 Optional wet wall application in plasterboard separating elements

In test report FSV2163, the tested access panels consisted of an externally profiled galvanised steel frame with a polymeric flange. The polymeric flange measured 41 mm × 25 mm × 2 mm thick and had a perforated edged face to form a set bead (wet wall) to be plastered into place. The polymeric flange was fixed to the steel section of the frame with 3.9 mm steel rivets located at nominal 240 mm centres. A bead of FyreFLEX™ sealant was applied to the rear of the flange before fitting and a 10 mm × 10 mm fillet was applied to the rear perimeter against the plasterboard lining in the aperture. The polymeric flange was located on the unexposed face of the plasterboard wall extending 25 mm over the wall and set with Gyprock plasterboard compound.

It is proposed that this wet wall application can be extended to all vertical and horizontal separating elements made of plasterboard. This includes plasterboard walls, plasterboard floors / ceilings and other separating elements which have been locally built up with plasterboard layers.

Based on further evidence from test reports including FRT190298 and FRT200160 where a polymeric flange design was tested around the access panels, it is expected that the polymeric flanges improve the insulation performance of the system by reducing the unexposed face temperatures. It is expected that the polymeric flange with perforated edged face will also perform similarly due to its manufacture

[8] European Committee for Standardization, 2019, Test methods for determining the contribution to the fire resistance of structural members - Part 7: Applied protection to timber members, BS EN 13381-7:2019, European Committee for Standardization, Brussels, Belgium.

from PVC / plastic. Additionally, plastering the flange with plasterboard compound is not expected to detrimentally affect the fire performance of the system, so it is expected that the wet wall application can be used as an alternative to the polymeric Flanged Edge (FE) design.

6.6 Integrity performance with Lockwood LW Rim night-latch lock

Generally, the hardware associated with access panels are hinges and locksets. For the access panels assessed in previous sections, the assessed lock is the Trafalgar FR Budget lock which had been tested with FyreSHIELD access panels in various tests including FRT200160, FRT200161 and FSV2163.

It is proposed that the assessed Budget lock is replaced with a Kaba Nightlatch for an integrity performance of 120 minutes. In FR3982, the tested access panel (specimen B) had a Lockwood LW Rim night-latch lock installed on the exposed face of the panel with the escutcheon fitted to the unexposed face through a 32 mm diameter hole through the panel. The latch plate was formed by a slot cut in the adjacent frame stop. The test specimen achieved an FRL of -/120/60. Test observations state that, at around 103 minutes, the MDF facing on the panel charred and lifted away from the core of the hatch – notably around the escutcheon and the perimeter of the hatch. Despite this, integrity was maintained for the duration of the test for 120 minutes.

Therefore, a Kaba Nightlatch lock can be assessed for an integrity performance of up to 120 minutes – limited by the performance of the access panel and separating element as applicable. The insulation performance will be as assessed in section 6.3 for the relevant separating elements.

6.7 Assessment outcome

This assessment demonstrates that the hinged FyreSHIELD access panels with and without Rakbak and screw-fixed FyreSHIELD access panels are expected to achieve the FRLs given in Table 8 – in accordance with AS 1530.4:2014.

Table 8 Variations and assessment outcome

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 116 mm thick plasterboard wall system consisting of minimum 64 mm deep 0.5 BMT steel studs clad with two layers of 13 mm thick fire-rated plasterboard on both sides	Construction details to include: • Up to 600 mm × 600 mm FyreSHIELD access panels in all separating elements except concrete / masonry walls in which the size varies up to 740 mm × 740 mm • The optional local thickening of the Hebel and plasterboard wall systems using additional fire-rated plasterboard (other than that specified as applicable) so the frame does not protrude. • A bead of Trafalgar FyreFLEX™ sealant must be applied around the perimeter of the aperture and to the back of the flange before inserting panel into the wall. • A 10 mm sealant fillet must be applied at the aperture between the wall and the FyreFrame. • Adding Gee Whiz intumescent strips to line the lock hole when Rakbak is not installed. • Adding Gee Whiz intumescent strips to the door seat.	• Up to 600 mm × 600 mm FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 96 mm thick plasterboard wall system consisting of minimum 64 mm deep 0.5 BMT steel studs clad with one layer of 16 mm thick fire-rated plasterboard on both sides		• Up to 600 mm × 600 mm FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/90/45 with Rakbak -/90/60 with Rakbak and additionally the aperture must be built locally with an additional layer of 13 mm extending at least 100 mm in all directions from the edge of the aperture on both sides. -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FRT180356 R2.0 FRT200160 R2.0	Minimum 90 mm thick plasterboard wall system consisting of minimum 64 mm deep 0.5 BMT steel studs clad with one layer of 13 mm thick fire-		• Up to 600 mm × 600 mm hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange.	-/60/45 with Rakbak -/60/60 with Rakbak and additionally the aperture must be built-up locally with an additional layer of 13 mm extending at least	-/60/60 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
FRT200161 R1.0 FSP1307	rated plasterboard on both sides	• FyreFrame incorporating 2 mm thick polymeric flange with Gee Whiz intumescent backing. • Openings in fire barriers up to 10 mm larger than frame size. • Hinged panels to consist of door panel of 30 mm Maxilite with MDF on one face and fibre cement on the other and optionally cladded with Rakbak incorporating 20 mm deep back pan with 25 mm thick rockwool (density 80 kg/m^3) sandwiched to rear of door panel • Screw-fixed panels to consist of door panel of 60 mm thick Maxilite core with MDF facings on both sides. There is no Rakbak. • The framing of the screw-fixed access panels to consist of an additional 2 mm thick polymeric flange overlapping with the rear face of the panel covering the steel pan. An intumescent strip is installed behind the polymeric flange. • Optional wet wall application for polymeric flanges of access panels in plasterboard separating elements. • Apertures in framed walls (including the AlphaPanel wall configurations) must be lined with fire-rated plasterboard equal to the wall specifications.	• The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	100 mm in all directions from the edge of the aperture on both sides. -/60/30 without Rakbak in both directions of fire exposure	
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 90 mm thick shaft wall consisting of minimum 64 mm deep steel studs cladded with two layers of 13 mm fire-rated plasterboard on the exposed side and a 25 mm fire-rated Shaftliner plasterboard on the unexposed side		• Up to 600 mm × 600 mm hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The aperture opening must be lined. Reinforcing trimmers must be provided across the studs to stabilise the opening as C-H studs do not have noggins on the shaft wall side. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 96 mm thick shaft wall consisting of minimum 64 mm deep steel studs cladded with two layers of 16 mm fire-rated plasterboard on the exposed side and a 25 mm fire-rated Shaftliner plasterboard on the unexposed side		• Up to 600 mm × 600 mm hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange. • The aperture opening must be lined. Reinforcing trimmers must be provided across the studs to stabilise the opening	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
		• The access panels must be secured to the separating element with the appropriate screw sizes at the given nominal centres. •	as C-H studs do not have noggins on the shaft wall side. • The access panels must be secured to the wall at the aperture using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.		
FP6372 FRT190298 R1.0 FRT200160 R2.0 FRT200161 R1.0	Minimum 60 mm thick Pronto Panel™ wall		• Up to 600 mm wide × 600 mm high FyreSHIELD access panel – with local build up around the aperture with 13 mm thick fire-rated plasterboard layer extending 100 mm in all directions from the edge of the aperture (on the side of the panel leaf). • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm needle point screws at maximum nominal 170 mm centres. • Fire exposure from two directions.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure
FP6372 FRT190298 R1.0 FRT200160 R2.0 FRT200161 R1.0	Minimum 75 mm thick Hebel wall or AAC wall system (minimum density 650 kg/m^3)		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture (on the side of the panel leaf).	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 100 mm needle point screws at maximum nominal 170 mm centres. • Fire exposure from two directions.		
FRT190298 R1.0 FRT200160 R2.0 FRT200161 R1.0	Minimum 78 mm thick Speedpanel wall		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture (on the side of the panel leaf). • The aperture must be capped with C-tracks. • The access panels must be secured to the wall at the aperture using 10g × 40 mm self-drilling screws at maximum nominal 200 mm centres. • The access panel must have a polymeric (or PVC) flange. • The access panel opening away from the furnace.	-/120/60 with Rakbak -/120/45 without Rakbak The access panel opening away from the furnace	-/120/120 with polymeric flange on both sides in both directions of fire exposure
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with a 13 mm thick plasterboard layer extending 100 mm in all directions from the aperture.	-/90/60 with Rakbak -/90/30 without Rakbak The access panel opening towards the furnace	

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the wall at the aperture using 10g × 40 mm self-drilling screws at maximum nominal 200 mm centres. • The access panel opening towards the furnace		
FRT200160 R2.0 FRT200161 R1.0 FSV2163 FRT180356 R2.0	Minimum 51 mm thick wall consisting of a 35 mm AlphaPanel cladded with one layer of 16 mm fire-rated plasterboard direct fixed to the AlphaPanel		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels – with local build up around the aperture with two layers of 16 mm thick plasterboard layer extending 100 mm in all directions from the aperture. • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the AlphaPanel wall using 6 mm concrete/masonry screw at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure
FRT200160 R2.0 FRT200161 R1.0 FSV2163 FRT180356 R2.0	Minimum 91 mm thick wall consisting of a 35 mm AlphaPanel with one layer of 16 mm fire-rated plasterboard fixed to furring channels connected to the AlphaPanel. The air cavity between the furring channels and the		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with a 16 mm thick plasterboard layer extending 100 mm in all directions from the aperture on the plasterboard face.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure when the overlapping stud is covered with a strip of fire-rated plasterboard	-/90/90 with polymeric flange on both sides in both directions of fire exposure when the overlapping stud is covered with a strip of fire-rated plasterboard

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
	AlphaPanel is minimum 40 mm		• Local build up around the aperture with one layer of 16 mm thick plasterboard extending 100 mm in all directions from the aperture covering the flanges of the steel studs on the AlphaPanel face for 60 minutes insulation performance. • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/90/30 with or without Rakbak In both directions of fire exposure when the overlapping studs are not covered with plasterboard	
FRT200160 R2.0 FRT200161 R1.0 FSV2163 FRT180356 R2.0	Two layers of minimum 35 mm thick AlphaPanels with an air gap, or optionally cavity insulation. Where the total wall thickness is less than 116 mm, fire-rated plasterboard extending minimum 100 mm from the edge of the aperture must be installed to locally thicken the wall up to minimum 116 mm		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with a 16 mm thick plasterboard layer extending 100 mm in all directions from the aperture on the plasterboard face. • The access panel must have a polymeric (or PVC) flange. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
FRT200160 R2.0 FRT200161 R1.0 FRT190298 R1.0 FSV2163 FRT180356 R2.0	Two layers of 15 mm thick A1 Corex fire-rated boards on one side of the steel framework.		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with three layers of 15 mm thick A1 Corex (or equivalent) extending 100 mm in all directions from the aperture on the board face. • The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated board. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/60/60 with Rakbak -/60/30 without Rakbak in both directions of fire exposure	-/60/60 with polymeric flange on both sides in both directions of fire exposure
	Two layers of 20 mm thick A1 Corex fire-rated boards on one side of the steel framework.		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with two layers of 20 mm thick A1 Corex (or equivalent) extending 100 mm in all directions from the aperture on the board face. • The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated board. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres.	-/90/60 with Rakbak -/90/30 without Rakbak in both directions of fire exposure	-/90/90 with polymeric flange on both sides in both directions of fire exposure

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• Fire exposure from two directions.		
	Two layers of 25 mm thick A1 Corex fire-rated boards on one side of the steel framework.		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels. • Local build up around the aperture with one layer of 25 mm thick A1 Corex (or equivalent) extending 100 mm in all directions from the aperture on the board face. • The studs must be boxed with minimum 25 mm thick A1 Corex fire-rated board. • The access panels must be secured to the steel stud using 10g × 100 mm plasterboard screws at maximum nominal 150 mm centres. • Fire exposure from two directions.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FRT180356 R2.0 FRT200160 R2.0 FRT200161 R1.0 FSP1307	Minimum 116 mm thick concrete / masonry wall		• Up to 600 mm wide × 600 mm high hinged FyreSHIELD access panels • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the concrete / masonry wall with minimum 6 mm expanding masonry anchors at maximum nominal 200 mm centres. • Fire exposure from two directions.	-/120/60 with Rakbak -/120/30 without Rakbak in both directions of fire exposure	-/120/120 with polymeric flange on both sides in both directions of fire exposure
FSV2163 FSP1307	Minimum 230 mm thick concrete / masonry wall		• Up to 740 mm wide × 740 mm high screw-fixed FyreSHIELD access panels	-	-/120/120 with polymeric flange on both sides

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the concrete / masonry wall with minimum 6 mm expanding masonry anchors at maximum nominal 200 mm centres. • Fire exposure from two directions.		in both directions of fire exposure
TR-F48.01	Floor / ceiling system with three layers of 16 mm thick fire-rated plasterboard on the exposed side – suspended from timber joists with steel or timber grid system		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from below with access panel opening into the fire.	-/120/120 and RISF of 60 minutes with Rakbak	-/120/120 RISF of 60 minutes
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from above with access panel opening away from the fire.	-/120/120 with Rakbak	-/120/120

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
TR-F48.01 FSH0597	Floor / ceiling system with two layers of 16 mm thick fire-rated plasterboard on the exposed side – suspended from timber joists with steel or timber grid system		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using minimum 8 g × 65 mm needle point bugle head screws • Fire exposure from below with access panel opening into the fire.	-/60/60 and RISF of 60 minutes with Rakbak	-/60/60 RISF of 60 minutes
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from above with access panel opening away from the fire.	-/60/60 with Rakbak	-/60/60
TR-F48.01 FSH0597	Floor / ceiling system with two layers of 13 mm thick fire-rated plasterboard on the exposed side – suspended from timber joists with steel or timber grid system		• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws	-/60/60 and RISF of 45 minutes with Rakbak	-/60/60 RISF of 45 minutes

Reference tests	Separating element	Construction details	FyreSHIELD access panel	FRL – Hinged access panels	FRL – Screw-fixed access panels
			• Fire exposure from below with access panel opening into the fire.		
			• Up to 600 mm wide × 600 mm high FyreSHIELD access panels with Rakbak • The access panel must have a polymeric (or PVC) flange • The access panels must be secured to the ceiling at the aperture using 8 g × 65 mm needle point bugle head screws • Fire exposure from above with access panel opening away from the fire.	-/60/60 with Rakbak	-/60/60

Note 1: For all assessed FyreSHIELD access panels, Lockwood LW Rim night-latch locks can be substituted instead of the Trafalgar FR Budget lock for the same assessed FRL.

Note 2: For all assessed systems, wet wall application where the polymeric flange of the access panel is plastered onto the separating element with plasterboard compound can be used as an option for the same assessed FRL.

Note 3: In access panels without the Rakbak, the keyhole must be lined with intumescent to eliminate the possibility of early integrity failure with flaming through the keyhole.

Note 4: For screw fixed panels, the assessed FRL apply to panels with either flanged edge polymeric frame or with perforated polymeric frame with wet wall application overlapping the separating element. There must be an additional polymeric flange, with intumescent strip backing, installed overlapping the steel pan on the rear of the panel as shown in Figure 11.

Note 5: All separating elements must be tested or assessed in accordance with AS 1530.4:2014 by an accredited testing laboratory to achieve an established FRL equivalent or greater than the FRL assessed for the access panels.

7. Validity

Warringtonfire Australia does not endorse the tested or assessed product in any way. The conclusions of this assessment may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Due to the nature of fire testing and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

This assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are subject to constant review and improvement. It is therefore recommended that this report be reviewed on, or before, the stated expiry date.

This assessment represents our opinion about the performance of the proposed systems expected to be demonstrated on a test in accordance with AS 1530.4:2014, based on the evidence referred to in this report.

This assessment is provided to Trafalgar Group for their own specific purposes. This report may be used as Evidence of Suitability in accordance the requirements of the relevant National Construction Code. Building certifiers and other third parties must determine the suitability of the systems described in this report for a specific installation.

Appendix A Drawings and additional information

Table 9 Details of drawings

Figure	Dwg no	Date	Drawn
Figure 1	1	13 May 2020	Trafalgar Group
Figure 2	4		
Figure 3	5		
Figure 4	6		
Figure 5	-	10 September 2021	
Figure 6	1	24 January 2023	
Figure 7	2		
Figure 8	3		
Figure 9	4		
Figure 10	-	3 November 2022	
Figure 11	2	25 March 2022	
Figure 12	-	23 March 2023	

Appendix B Summary of supporting test data

B.1 Test report – FP6372

Table 10 Information about test report

Item	Information about test report
Report sponsor	Fire Containment Pty Ltd, 26a Ferndell Street, South Granville NSW 2142, Australia
Test laboratory	Branz, 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand
Test date	The fire resistance test was done on 3 July 2018.
Test standards	The test was done in accordance with AS 1530.4:2014.
Variation to test standards	None
General description of tested specimen	The tested specimen consisted of four pipe penetrations and an access panel through a 75 mm thick Hebel PowerPanel wall. The tested assembly consisted of four specimens. However, for this assessment, the performance of specimen 3 will be considered. Specimen 3 consisted of a Trafalgar 450 mm × 450 mm FRC Fire-rated Access Panel.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.

The test specimen achieved the following results – see Table 11.

Table 11 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
3	450 mm × 450 mm FRC Fire-rated Access Panel	92	17	-/90/-

B.2 Test report – FRT180356 R2.0

Table 12 Information about test report

Item	Information about test report
Report sponsor	Trafalgar Fire, 26A Ferndell Street, Granville NSW 2142
Test laboratory	Exova Warringtonfire Aus Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, VIC 3175
Test date	The fire resistance test was done on 2 October 2018.
Test standards	The test was done in accordance with AS 1530.4:2014.
Variation to test standards	None
General description of tested specimen	The test assembly consisted of a nominal 1595 mm wide × 1595 mm long × 116 mm thick fire-rated plasterboard wall system with two access panels. The wall system was restrained at all edges. The wall system consisted of 64 mm 0.5 BMT steel framing system with two layers of 13 mm fire-rated plasterboard on both the exposed and unexposed side. The specimen consisted of Trafalgar FRC+ access panels. The western access panel consisted of a plastic flange design and eastern access panel consisted of a cover plate design. The aperture size for both access panel were 410 mm × 410 mm high and the local protection was Trafalgar FyreFLEX™ sealant. Both access panels opened away from the furnace. For this assessment, penetration system A will be only be used.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.

The test specimen achieved the following results – see Table 13.

Table 13 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
A	410 mm × 410 mm Trafalgar FRC + (plastic flange design)	Failure at 75 minutes	Failure at 57 minutes	-/60/30

B.3 Test report – FRT190298 R1.0

Table 14 Information about test report

Item	Information about test report
Report sponsor	Trafalgar Fire, 26A Ferndell Street, Granville NSW 2142
Test laboratory	Warringtonfire Australia Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, VIC 3175, Australia
Test date	The fire resistance test was done on 23 January 2020.
Test standards	The test was done in accordance with AS 1530.4:2014.
Variation to test standards	None
General description of tested specimen	The test specimen consisted of a Speedpanel wall system penetrated by two penetration systems and an access panel. The access panel was of an overall size of 585 mm wide × 585 mm high × 39 mm thick. The access panel leaf consisted of a panel core sandwiched between the MDF skin on the unexposed side and the fibre cement skin on the exposed side. Intumescent strips were fitted around the perimeter of the access panel.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.

The test specimen achieved the following results – see Table 15.

Table 15 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
C	585 mm × 585 mm Trafalgar FRC + (plastic flange design)	No failure at 121 minutes	Failure at 49 minutes	-/120/30

B.4 Test report – FRT200160 R2.0

Table 16 Information about test report

Item	Information about test report
Report sponsor	Trafalgar Fire, 26A Ferndell Street, Granville NSW 2142
Test laboratory	Warringtonfire Australia Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, VIC 3175, Australia
Test date	The fire resistance test was done on 19 May 2020.
Test standards	The test was done in accordance with AS 1530.4:2014.
Variation to test standards	None
General description of tested specimen	The tested assembly consisted of 1600 mm × 1600 mm × 60 mm Pronto Panel™ penetrated by 10 penetration systems and one access panel. For this assessment, the details and the fire resistance performance of the access panel will be considered. Specimen K consisted of 600 mm wide × 600 mm high Trafalgar FRC+ access panel opening into the furnace.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.

The test specimen achieved the following results – see Table 17.

Table 17 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
K	600 mm × 600 mm Trafalgar FyreSHIELD access panel	Failure at 118 minutes	Failure at 84 minutes	-/90/60

B.5 Test report – FRT200161 R1.0

Table 18 Information about test report

Item	Information about test report
Report sponsor	Trafalgar Fire, 26A Ferndell Street, Granville NSW 2142
Test laboratory	Warringtonfire Australia Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, VIC 3175, Australia
Test date	The fire resistance test was done on 20 May 2020.
Test standards	The test was done in accordance with AS 1530.4:2014.
Variation to test standards	None
General description of tested specimen	The tested assembly consisted of 1600 mm × 1600 mm × 60 mm Pronto Panel™ penetrated by one penetration systems and one access panel. For this assessment, the details and the fire resistance performance of the access panel will be considered. Specimen B consisted of 600 mm wide × 600 mm high Trafalgar FRC+ access panel- opening away from the furnace.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.

The test specimen achieved the following results – see Table 19.

Table 19 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
K	600 mm × 600 mm Trafalgar FyreSHIELD access panel	Failure at 73 minutes	Failure at 73 minutes	-/60/60

B.6 Test report – TR-F48.01

Table 20 Information about test report

Item	Information about test report
Report sponsor	Trafalgar Fire Containment Solutions Pty Ltd, 26A Ferndell Street, Granville NSW 2142
Test laboratory	Resolute Testing Laboratories, 18-19, 79 Paisley Drive, wanton, QLD 4501
Test date	The fire resistance test was done on 3 November 2020
Test standards	The test was done in accordance with AS 1530.4:2014.
Variation to test standards	None
General description of tested specimen	The supporting construction consisted of a suspended floor/ceiling system measuring 1600 mm × 1600 mm × 352 mm overall. Specimen A was a Trafalgar FyreSHIELD PLUS access panel measuring 600 mm × 600 mm. It was installed into the ceiling using 8 g × 65 mm needle point bugle head screws through each side of the frame of the hatch into the furring channel on two sides and the top cross rails on the other two sides. The FyreSHIELD PLUS access panel had a 30 mm Maxilite board (density 300 kg/m^3) panel core, the unexposed face of the panel was fibre cement board (density 1350 kg/m^3) 585 mm × 585 mm and on the exposed face was a medium density fibreboard (MDF with density 870 kg/m^3). The steel back pan was 0.5 mm thick galvanised steel that housed the mineral wool infill (80 kg/m^3 rockwool) 25 mm thick. The access panel frame was 1.1 mm galvanised mild steel with all steel Trafalgar FR hinge set, installed at nominal 100 mm, 300 mm and 500 mm from the bottom of the panel leaf to the centre of the hinge. Nominal 5 mm gaps were cut around the back pan and mineral wool infill. The lockset is a Trafalgar FR budget lock 85 mm long × 25 mm wide galvanised mild steel. The access panel flange was 41 mm × 25 mm × 2 mm thick PVC fixed to the frame with 3.9 mm steel rivets, located at nominal 240 mm centres.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.

The test specimen achieved the following results – see Table 21.

Table 21 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL	Resistance to incipient spread of fire
A	600 mm × 600 mm Trafalgar FyreSHIELD PLUS access panel	No failure at 122 minutes	No failure at 122 minutes	-/120/120	Failure at 72 minutes

B.7 Test report – FSV2163

Table 22 Information about test report

Item	Information about test report
Report sponsor	Trafalgar Group Pty Ltd, 26A Ferndell Street, Granville NSW 2142
Test laboratory	Infrastructure Technologies, CSIRO, 14 Julius Avenue, North Ryde, NSW 2113
Test date	The fire resistance test was done on 8 December 2020.
Test standards	The test was done in accordance with AS 1530.4:2014.
Variation to test standards	None
General description of tested specimen	The specimen consisted of a 3000 mm wide × 2770 mm high × 116 mm thick plasterboard wall with various service penetrations, including four access panels. The wall system comprised two layers of 13 mm thick CSR Fyrchek plasterboard fixed on both sides of 64 mm steel studs. The first and third specimens were FyreSHIELD PLUS hinged fire-rated access panels opening away from the furnace chamber and the second and fourth specimens were FyreSHIELD PLUS hinged fire-rated access panels opening into (towards) the furnace. The access panel frames comprised a 1.1 mm thick × 400 mm × 400 mm externally profiled galvanised steel frame with a 385 mm square polymeric flange. Gee Whiz 25 mm wide × 1.8 mm thick intumescent strips with an adhesive tape backing were fixed to the outside perimeter and the vertical faces of the steel frame. The polymeric flange had a perforated edged face to form a set bead (wet wall) to be plastered into place. Specimen 1 and 2 were access panels comprised a laminated door panel with a 4 mm front facing, 30 mm thick Maxilite core, a 4.5 mm fibre cement back facing with a 20 mm deep × 0.5 mm thick perforated galvanised steel backing (RakBak) filled with 25 mm thick Rockwool. The access panels were fitted with galvanised mild steel Trafalgar FR budget lock measuring 85 mm long and 25 mm wide. The main difference between specimen 1 and specimen 2 was the orientation. Specimen 3 and 4 were access panels comprised a 60 mm thick Maxilite core with 4 mm thick MDF facings on both sides. All access panels were the screw-fixed type.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.

The test specimen achieved the following results – see Table 23.

Table 23 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
1	400 mm × 400 mm Trafalgar FyreSHIELD PLUS hinged access panel	No failure at 121 minutes	90 minutes	-/120/90
2		No failure at 121 minutes	81 minutes	-/120/60
3	400 mm × 400 mm Trafalgar FyreSHIELD SF access panel	No failure at 121 minutes	No failure at 121 minutes	-/120/120
4		No failure at 121 minutes	109 minutes	-/120/90

B.8 Test report – FSP1307

Table 24 Information about test report

Item	Information about test report
Report sponsor	F&S Group Pty Ltd T/A Fire Containment, Unit 8, 52 Holker Street, Silverwater NSW
Test laboratory	CSIRO, 14 Julius Avenue, North Ryde, NSW 2113
Test date	The fire resistance test was done on 2 May 2008.
Test standards	The test was done in accordance with AS 1530.4:2005.
Variation to test standards	None
General description of tested specimen	The specimen comprised an access panel screw fixed into a steel perimeter frame. The perimeter frame was fixed into an opening in a 230 mm thick masonry wall. The access panel measured nominally 740 mm high × 740 mm wide × 68 mm thick. The access panel was fabricated using a 60 mm thick Maxilite board core faced with 4 mm thick MDF board. The MDF face sheeting was fixed to the Maxilite core using a contact adhesive. The access panel was fitted into the perimeter frame allowing a 5 mm clearance on all sides. The access panel was fixed into the steel perimeter frame using 100 mm long countersunk head M6 bolts fitting into the frame mounted M6 speed nuts at nominally 250 mm centres. The Lorient HP4002 intumescent seal was located between the edge of the access panel and the perimeter frame on all four sides of the panel.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2005.

The test specimen achieved the following results – see Table 25.

Table 25 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
1	740 mm high × 740 mm wide access panel	No failure at 241 minutes	20 minutes	-/240/-

B.9 Test report – FR3982

Table 26 Information about test report

Item	Information about test report
Report sponsor	Abesco Limited, Abesco House, Laurencekirk Business Park, Scotland
Test laboratory	BRANZ, Moonshine Road, Judgeford, Private Bag, New Zealand
Test date	The fire resistance test was done on 17 June 2008.
Test standards	The test was done in accordance with AS 1530.4:2005.
Variation to test standards	None
General description of tested specimen	The specimen consisted of a plasterboard wall separating element comprising a double layer of 16 mm thick Gyprock® Fyrchek plasterboard on the exposed and unexposed sides of the wall. Specimen B was an access panel penetrating the plasterboard wall through a 397 mm × 397 mm aperture which was lined with a single layer of 16 mm thick plasterboard before installing the access frame. The access panel comprised a metal frame with a hinged hatch fabricated from Maxilite board. The frame was made of mild steel and the profile was such that a flange was created measuring 28 mm which fitted against the unexposed face of the wall. The overall dimensions of the access panel was 450 mm × 450 mm. A lockwood LW Rim night-latch was installed on the exposed face of the panel with the escutcheon fitted to the unexposed face of the panel through a 32 mm diameter hole through the panel.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2005.

The test specimen achieved the following results – see Table 27.

Table 27 Results summary for this test report

Specimen	Penetration Details	Integrity	Insulation	FRL
B	450 mm high × 450 mm wide access panel with a lockwood LW Rim night-latch lock	No failure at 121 minutes	67 minutes	-/120/60

B.10 Test report – FSH0597

Table 28 Information about test report

Item	Information about test report
Report sponsor	Boral Plasterboard, 676 Lorimer Street, Port Melbourne VIC
Test laboratory	CSIRO, 14 Julius Avenue, North Ryde, NSW 2113
Test date	The fire resistance test was done on 25 June 1998.
Test standards	The test was done in accordance with AS 1530.4:1997.
Variation to test standards	None
General description of tested specimen	The specimen comprised a timber floor frame lined with chipboard floor sheeting protected by a suspended ceiling that used two different plasterboard systems. The floor section was constructed using 190 × 45 mm F7 seasoned Radiata pine joists places at 600 mm centres. The top of the frame was lined with 22 mm thick CSR Structaflor and fixed to the frame with nails. The suspended ceiling used two different plasterboard systems. The suspension frame assembled from Rondo 129 furring channels and Rondo 128 top cross rails, was suspended using suspension brackets nailed into the timber joists. A common upper layer of 13 mm thick fire-rated plasterboard was fixed to the furring channels using 30 mm screws at 200 mm centres in the field and 150 mm centres along butt joints. The lower layers of 13 mm or 16 mm thick fire-rated plasterboard were screwed to the upper layer of plasterboard and into the furring channels using 40 mm screws at the same centres as the upper layer. The dimensions of the 13 mm lower layer section were nominally 2600 mm wide × 4540 mm long (13 mm / 13 mm system) while the 16 mm section was nominally 1040 mm wide × 4540 mm long (13 mm / 16 mm system). A 1.5 kPa uniformly distributed load was applied onto the ceiling system.
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:1997.

The test specimen achieved the following results – see Table 29.

Table 29 Results summary for this test report

Specimen	Integrity	Insulation	Resistance to incipient spread of fire	FRL
Ceiling system with 13 mm / 16 mm plasterboard layers on exposed side	No failure at 63 minutes	No failure at 63 minutes	No failure at 63 minutes	-/60/60

warringtonfire

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