

# FIRE ASSESSMENT REPORT

**AR25040**

## LIKELY FIRE RESISTANCE OF AGNI-BOXES WITH AND WITHOUT SERVICES INSTALLED IN VARIOUS VERTICAL SEPARATING ELEMENTS

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# Table of Contents

1.1	Document Revision Schedule .....	4
1.2	Signatories .....	4
1.3	Contact Details .....	5
2.	Introduction .....	6
3.	Test reports .....	6
4.	Assessment Summary .....	7
4.1	AGNI-Box specification .....	7
4.2	Empty AGNI-Boxes .....	7
4.3	AGNI-Box general installation details .....	9
4.3.1	Installation detail A-1 .....	9
4.3.2	Installation detail A-2 .....	10
4.3.3	Installation detail B-1 .....	11
4.3.4	Installation detail B-2 .....	12
4.3.5	Installation detail C-1 .....	13
4.3.6	Installation detail C-2 .....	14
4.3.7	Installation detail D-1 .....	15
4.3.8	Installation detail D-2 .....	16
4.3.9	Installation detail E .....	17
4.4	AGNI-Box specific installation details .....	18
4.4.1	Installation of AGNI-Shield insulating wrap .....	18
4.4.2	Installation detail to the concrete soffit .....	19
4.4.3	Installation detail to the concrete soffit with AGNI-Sheild .....	20
4.4.4	Modular installation .....	21
4.4.5	Fillet/cone detail .....	22
4.4.6	AGNI-Box fixing details .....	23
4.5	Services in AGNI-Boxes .....	24
4.5.1	Services passing through AGNI-Box – up to -/60/60 .....	24
4.5.1	Services passing through AGNI-Box – up to -/120/120 .....	28



5. Validity of the assessment.....32

6. Authority.....33

Appendix A – Discussion .....34

Appendix B – Supporting data .....39



## 1.1 Document Revision Schedule

Revision #	Date	Description
1	09/07/2025	Initial issue for review
2	11/07/2025	Issued to Client

## 1.2 Signatories

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## 2. Introduction

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The objective of the report is to assess the likely fire resistance performance of the AGNI-Box transit box fire protection system installed in various wall substrates if tested in accordance with AS1530.4: 2014 and with reference to AS4072.1:2005 (Amd. 1).

The following variations were considered in the assessment:

- Different thicknesses of separating elements
- Installation of the AGNI-Box with and without AGNI-Shield wrap
- Installation in different separating element types
- Various dimensions of the services
- Various configurations of the services

## 3. Test reports

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The list of reports considered in the current Assessment report is provided in the Table 1. Reports were made available to the Laboratory by the Assessment report sponsor:

**Table 1: Summary of the supporting data**

Test report #	Separating Element	Tested Specimens	Test Standard
PF24081	2 x 13mm FR Plasterboard Wall	Specimen # 2	AS 1530.4: 2014
PF24097	2 x 13mm FR Plasterboard Wall	Specimens # 1, 2, 3 & 4	AS 1530.4: 2014
PF24099	2 x 13mm FR Plasterboard Wall	Specimens # 1, 2, 3, 4, 5 & 6	AS 1530.4: 2014
PF24110	2 x 13mm FR Plasterboard Wall	Specimens # 1, 2, 3, 4, 5 & 6	AS 1530.4: 2014
PF24126	2 x 13mm FR Plasterboard Wall	Specimens # 1, 2, 3, 4, 5 & 6	AS 1530.4: 2014
PF24127	2 x 13mm FR Plasterboard Wall	Specimens # 1, 2, 3, 4 & 5	AS 1530.4: 2014
PF24145	75mm Hebel Wall	Specimen # 1	AS 1530.4: 2014

PF24146	25mm Shaft liner/16mm Plasterboard Wall	Specimen # 1	AS 1530.4: 2014
PF24152	1 x 13mm FR Plasterboard Wall	Specimen # 1	AS 1530.4: 2014
PF25005	2 x13mm FR Plasterboard wall	Specimens # 1, 2	AS 1530.4: 2014
PF25050	2 x13mm FR Plasterboard wall and 100 concrete ceiling	Specimens # 2	AS 1530.4: 2014

## 4. Assessment Summary

### 4.1 AGNI-Box specification

The AGNI-Box is a rectangular steel transit box having the nominal dimensions 300mm wide x 150mm high x 200mm deep. The base metal thickness is 0.9mm. The AGNI-Box was tested with a galvanised coating and black powder coating. The AGNI-Box has internal Z-shaped brackets recessed by 50mm inside the box, used as stoppers for the black intumescent foam with min. density 140 kg/m<sup>3</sup> and holders for the intumescent strips. Two layers of 100mm wide and 3.5mm thick intumescent materials are fixed between Z-brackets inside the AGNI-Box.

The AGNI-Box is designed to provide fire resistance protection with the foam installed on both sides of the AGNI-Box around the services as described in relevant sections of the current report.

### 4.2 Empty AGNI-Boxes

The AGNI-Boxes were tested and positively assessed in the substrates given in Tables 2 and 3. It was noted that the maximum overall thickness of the separating element shall not exceed 200mm. All separating elements shall have the published fire resistance rating, and the performance of AGNI-Box shall be limited to the published rating of the separating element. Installation methods are provided in Section 4.3

**Table 2: Summary of substrates – framed walls**

Lining	Framing	Overall thickness of Separating element	FRR/FRL of empty AGNI-Box
Min. 1 layer of min. 13mm FR Plasterboard	Min 64mm, min 0.5mm BMT steel stud	Min. 90mm	-/60/60
Min. 1 layer of min. 13mm FR Plasterboard	Min 90x45mm timber stud*	Min. 116mm	-/60/60
Min. 2 layers of min. 13mm FR Plasterboard	Min 64mm, min 0.5mm BMT steel stud	Min. 116mm	-/120/120
Min. 2 layers of min. 13mm FR Plasterboard	Min 90x45mm timber stud*	Min. 142mm	-/120/120
25mm Shaftliner with 16mm FR Plasterboard	Min 64mm, min 0.5mm BMT steel stud external framing	Min. 41mm	-/60/60

Note: \* - Same lining material and thickness of the plasterboard inside the opening

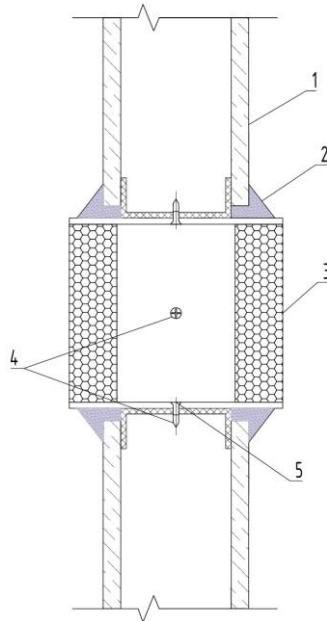
**Table 3: Summary of substrates – Other than framed walls**

Separating Element (SE)	Total SE Thickness	FRR/FRL of empty AGNI-Box
Concrete or masonry wall	Min. 90mm	-/60/60
Concrete or masonry wall	Min. 116mm	-/120/120
Hebel panel wall	75mm	-/120/120
AAC panel wall (without steel shell) +/-15% density (433.5-586.5 kg/m <sup>3</sup> )	75mm	-/120/120

All Separating elements shall have the published fire resistance level equal to or greater than the performance stated in Table 2 and Table 3.

## 4.3 AGNI-Box general installation details

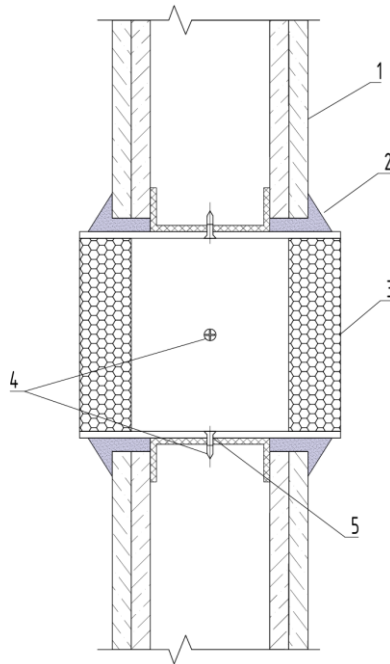
### 4.3.1 Installation detail A-1



**Figure 1 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 64mm steel stud with a minimum 1 x 13mm Fire-rated plasterboard on each side
2	Sealant – AGNI-Seal 1. Full depth of the plasterboard in the annular gap 2. Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings Fig. 14a or Fig 14b): 41mm self-tapping screws should be installed: Either - One min. 8G 41mm long screw per side, through the pre-punched holes in the centre of each side of the wall Or - Two min. 8G 41mm long screw per side, in the centre of each side of the AGNI-Box at min. 40mm from box face.
5	Annular gap: 1-5mm

### 4.3.2 Installation detail A-2

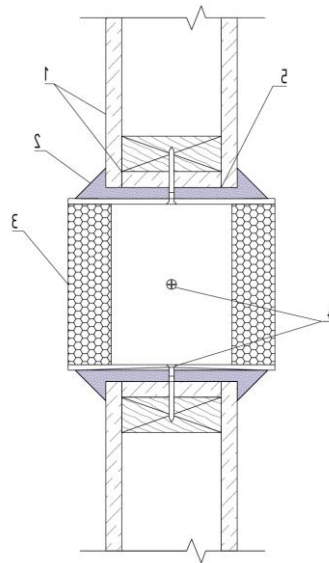


**Figure 2 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 64mm steel stud with a minimum 2 x 13mm Fire-rated plasterboard on each side
2	Sealant – AGNI-Seal 1 Full depth of the plasterboard in the annular gap 2 Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings Fig. 14a or Fig 14b): 41mm self-tapping screws should be installed: Either - One min. 8G 41mm long screw per side, through the pre-punched holes in the centre of each side of the wall Or - Two min. 8G 41mm long screw per side, in the centre of each side of the AGNI-Box at min. 40mm from box face.
5	Annular gap: 1-5mm



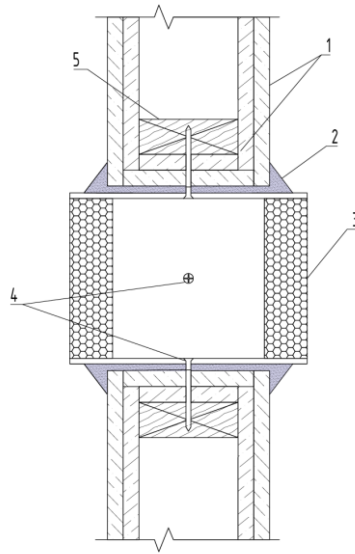
### 4.3.3 Installation detail B-1



**Figure 3 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 90x45mm timber stud with a minimum 1 x 13mm Fire-rated plasterboard on each side. Aperture lined with same type and thickness of plasterboard as the wall.
2	Sealant – AGNI-Seal 1 Full depth of the plasterboard in the annular gap 2 Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings (Fig. 14a or Fig 14b): 41mm self-tapping screws should be installed: Either - One min. 8G 41mm long screw per side, through the pre-punched holes in the centre of each side of the wall Or - Two min. 8G 41mm long screw per side, in the centre of each side of the AGNI-Box at min. 40mm from the AGNI-Box face.
5	Annular gap: 1-5mm

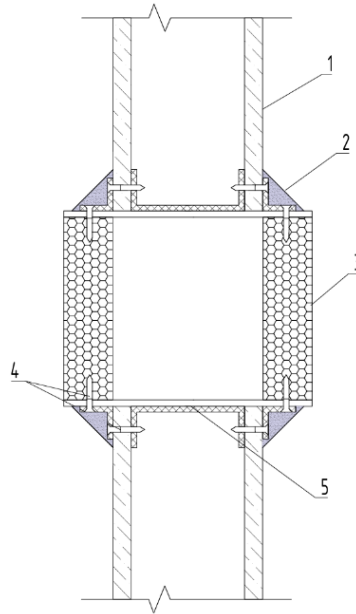
### 4.3.4 Installation detail B-2



**Figure 4 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 90x45mm timber stud with a minimum 2 x 13mm Fire-rated plasterboard on each side. Aperture lined with same type and thickness of plasterboard as the wall.
2	Sealant – AGNI-Seal 1 Full depth of the plasterboard in the annular gap 2 Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings Fig. 14a or Fig 14b): 41mm self-tapping screws should be installed: Either - One min. 8G 52mm long screw per side, through the pre-punched holes in the centre of each side of the wall Or - Two min. 8G 52mm long screw per side, in the centre of each side of the AGNI-Box at min. 40mm from box face.
5	Annular gap: 1-5mm

### 4.3.5 Installation detail C-1

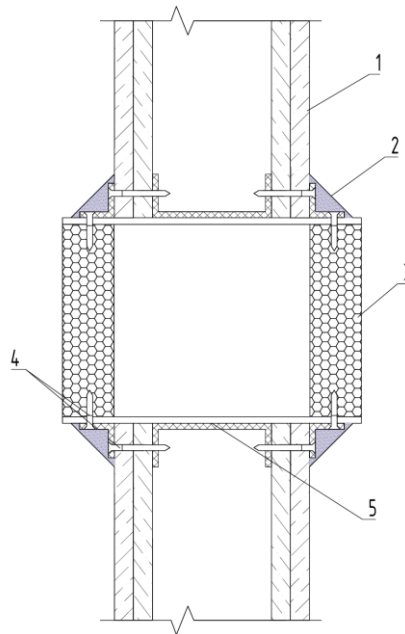


**Figure 5 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 64mm steel stud with a minimum 1 x 13mm Fire-rated plasterboard on each side
2	Sealant – AGNI-Seal 1 Full depth of the plasterboard in the annular gap 2 Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings: Minimum 200mm long 30x30mm 2mm BMT steel angle fixed with two min 41mm long screws positioned approximately 50mm from each end of the angle to the AGNI-Box and wall framing. Angles are required for long sides (top and bottom) only. The angle should be positioned approximately 50mm from each end of the AGNI-Box. For the fixing of steel angle to AGNI-Box – min 5mm stainless steel rivets may be used instead of screws.
5	Annular gap: 1-5mm



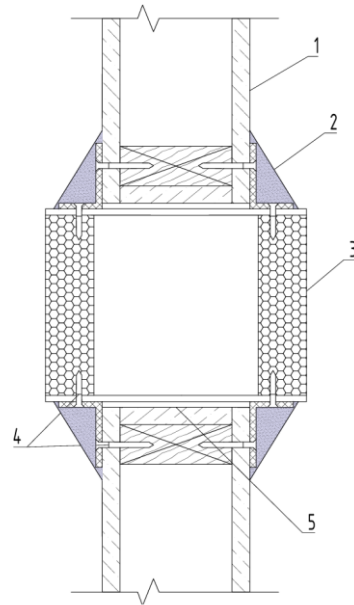
### 4.3.6 Installation detail C-2



**Figure 6 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 64mm steel stud with a minimum 2 x 13mm Fire-rated plasterboard on each side
2	Sealant – AGNI-Seal 1 Full depth of the plasterboard in the annular gap 2 Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings: Minimum 200mm long 30x30mm 2mm BMT steel angle fixed with two min 41mm long screws positioned approximately 50mm from each end of the angle to the AGNI-Box and wall framing. Angles are required for long sides (top and bottom) only. The angle should be positioned approximately 50mm from each end of the AGNI-Box. For the fixing of steel angle to AGNI-Box – min 5mm stainless steel rivets may be used instead of screws.
5	Annular gap: 1-5mm

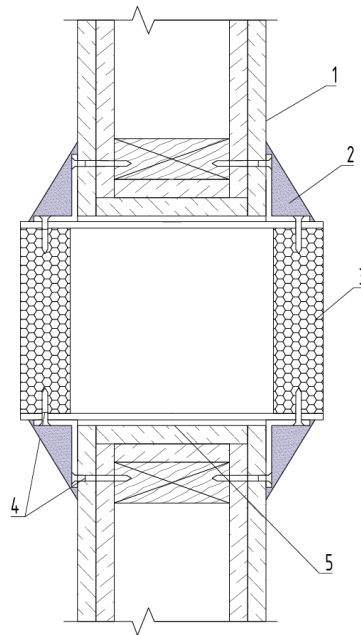
### 4.3.7 Installation detail D-1



**Figure 7 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 90x45 timber stud with a minimum 1 x 13mm Fire-rated plasterboard on each side. Aperture lined with same type and thickness of plasterboard as the wall.
2	Sealant – AGNI-Seal 1 Full depth of the plasterboard in the annular gap 2 Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings: Minimum 200mm long 30x30mm 2mm BMT steel angle fixed with two min 41mm long screws positioned approximately 50mm from each end of the angle to the AGNI-Box and wall framing. Angles are required for long sides (top and bottom) only. The angle should be positioned approximately 50mm from each end of the AGNI-Box. For the fixing of steel angle to AGNI-Box – min 5mm stainless steel rivets may be used instead of screws.
5	Annular gap: 1-5mm

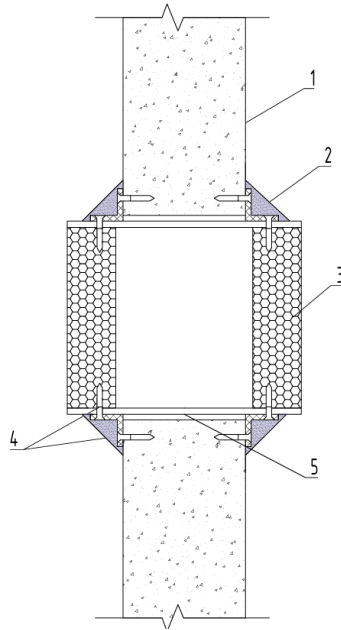
### 4.3.8 Installation detail D-2



**Figure 8 – Installation detail**

No.	Item Description
1	Wall type - Framed wall min 90x45 timber stud with a minimum 2 x 13mm Fire-rated plasterboard on each side. Aperture lined with same type and thickness of plasterboard as the wall.
2	Sealant – AGNI-Seal 1 Full depth of the plasterboard in the annular gap 2 Fillet/cone as per detail in Section 4.4.4.
3	Black Fire-Retardant Foam: 50mm thick foam to be installed friction fit on both sides
4	Fixings: Minimum 200mm long 30x30mm 2mm BMT steel angle fixed with two min 41mm long screws positioned approximately 50mm from each end of the angle to the AGNI-Box and wall framing. Angles are required for long sides (top and bottom) only. The angle should be positioned approximately 50mm from each end of the AGNI-Box. For the fixing of steel angle to AGNI-Box – min 5mm stainless steel rivets may be used instead of screws.
5	Annular gap: 1-5mm

### 4.3.9 Installation detail E



**Figure 9 – Installation detail**

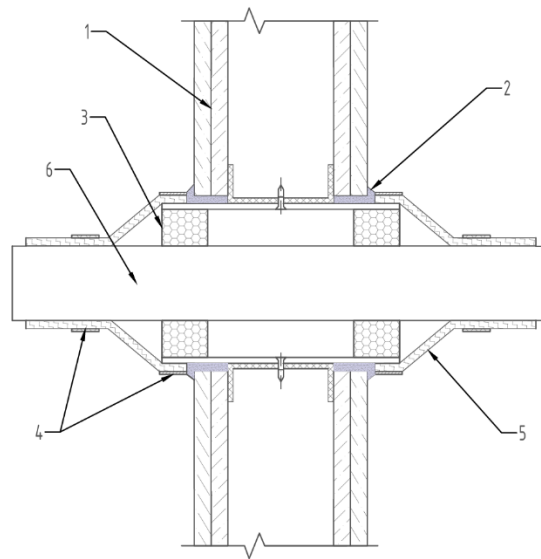
No.	Item Description
1	<p>Wall type:</p> <p>Min 75mm HEBEL wall</p> <p>Min 75mm AAC concrete wall (density 433.5- 586.5 kg/m<sup>3</sup>)</p> <p>Min 16mm FR plasterboard/25mm Shaftliner plasterboard</p> <p>Min 90mm Concrete/masonry wall</p>
2	<p>Sealant – AGNI-Seal</p> <p>1 Minimum 20mm deep in the annular gap</p> <p>2 For plasterboard walls - Full depth of the plasterboard in the annular gap</p> <p>3 Fillet/cone as per detail in Section 4.4.4.</p>
3	<p>Black Fire-Retardant Foam:</p> <p>50mm thick foam to be installed friction fit on both sides</p>
4	<p>Fixings:</p> <p>Minimum 200mm long 30x30mm 2mm BMT steel angle.</p> <p>Screws shall be suitable for the separating element and positioned approximately 50mm from each end of the angle:</p> <ul style="list-style-type: none"> <li>- For Hebel/AAC panels – min 45mm 12G hex head screws</li> <li>- For Concrete – min 35mm masonry screws</li> </ul>

	<ul style="list-style-type: none"> <li>- For plasterboard – min 41mm plasterboard screws</li> </ul> <p>For the fixing of steel angle to AGNI-Box – min 5mm OD stainless steel rivets may be used</p>
5	<p>Annular gap: 1-5mm</p>

## 4.4 AGNI-Box specific installation details

This Section provides specific details for the installation of the AGNI-Box; this Section shall be read in conjunction with Section 4.3 for the complete installation.

### 4.4.1 Installation of AGNI-Shield insulating wrap

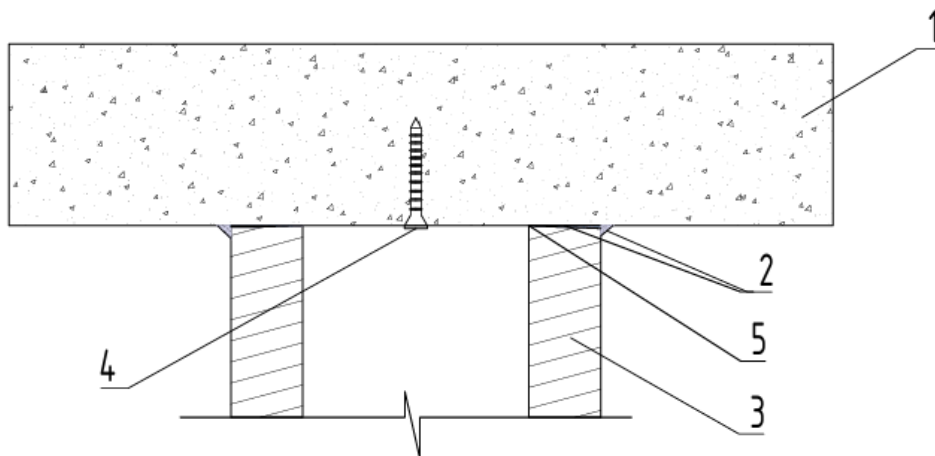


**Figure 10 – Installation detail**

No.	Item Description
1	AGNI-Box installation as per details A-E, two layers of plasterboard provided as example.
2	<p>Sealant – AGNI-Seal</p> <ol style="list-style-type: none"> <li>1. Minimum 20mm deep in the annular gap around the perimeter</li> <li>2. 20x20mm cone/fillet applied around the perimeter</li> </ol>
3	Black Fire-Retardant Foam:

	50mm thick foam to be installed friction fit on both sides
4	Fixings: AGNI-Strap stainless steel ties – One AGNI-Strap stainless steel tie to secure the AGNI-Shield to the protruding edge of the AGNI-Box. Additional AGNI-Straps to secure the AGNI-Shield to the service approximately mid-width and one AGNI-Strap approx. 50mm from the end of the AGNI-Shield.
5	AGNI-Shield –13mm thick one side foiled insulating blanket – wrapped around the services with min 50mm overlap, non-foil face to the services. Minimum 300mm from the wall, both sides of the wall.
6	Services as per Section 4.5

#### 4.4.2 Installation detail to the concrete soffit

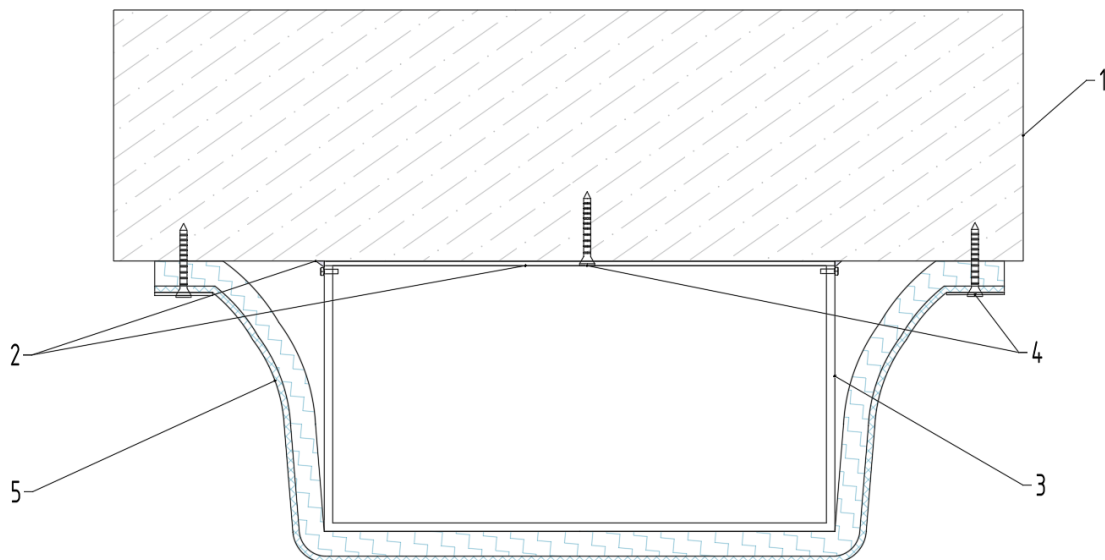


**Figure 11 – Installation detail**

No.	Item Description
1	Concrete ceiling or floor/ceiling system soffit to fit the required FRL (details shown on the drawing)  Wall type - The wall below the AGNI-Box not shown on the drawing for clarity. Wall to AGNI-Box junction - as per penetration details A to E as appropriate.
2	Sealant – AGNI-Seal  1. A 10mm bead of sealant is applied to the perimeter of the top removable part of the AGNI-Box prior to installation.

	<p>2. After installation – the joint between the AGNI-Box and concrete soffit is sealed with 5mm bead of sealant.</p> <p>3. Junction to the wall as per Penetration details A-E.</p>
3	<p>Black Fire-Retardant Foam:</p> <p>50mm thick foam to be installed friction fit on both sides</p>
4	<p>Fixings to the concrete soffit - Min 35mm masonry screw through the centre of the top removable side of the AGNI-Box.</p> <p>Fixings to the wall – as per penetration details A-E</p>
5	1-5mm gap

#### 4.4.3 Installation detail to the concrete soffit with AGNI-Sheild



**Figure 11a – Installation detail**

This section describes installation of the AGNI-Sheild to the AGNI-Box where the regular installation as per Section 4.4.1 is not possible due to the proximity to the concrete soffit. The installation of the AGNI-Box in the wall shall be performed in line with requirements of the relevant section and not discussed in this Section for clarity.

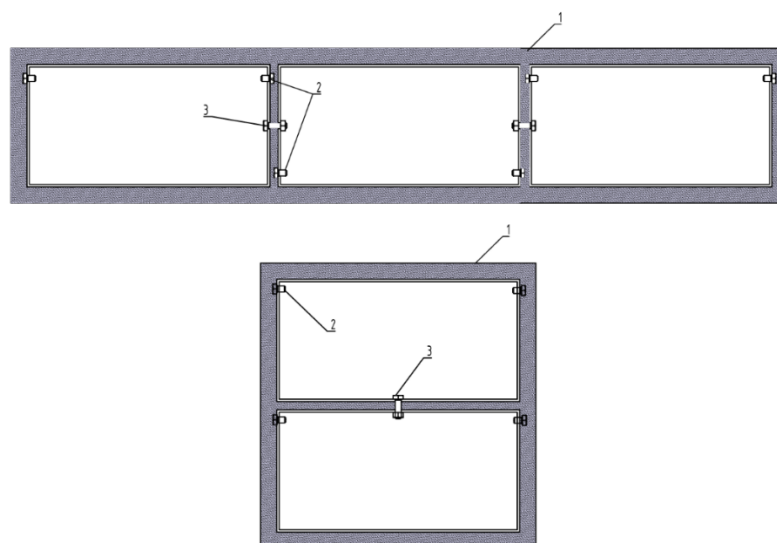
No.	Item Description
1	Concrete ceiling or floor/ceiling system soffit to fit the required FRL (details shown on the drawing)

	Wall type - The wall below the AGNI-Box not shown on the drawing for clarity. Wall to AGNI-Box junction - as per penetration details A to E as appropriate.
2	<p>Sealant – AGNI-Seal</p> <ol style="list-style-type: none"> <li>1. A 10mm bead of sealant is applied to the perimeter of the top removable part of the AGNI-Box prior to installation.</li> <li>2. After installation – the joint between the AGNI-Box and concrete soffit is sealed with 5mm bead of sealant.</li> <li>3. Junction to the wall as per Penetration details A-E.</li> </ol>
3	AGNI-Box
4	<p>Fixings to the concrete soffit - min 35mm masonry screw through the centre of the top removable side of the AGNI-Box.</p> <p>Fixings to the wall – as per penetration details A-E</p> <p>Fixings of the AGNI-Shield – AGNI-Shield is secured for the full length from both sides using min 1mm thick steel builder strap and Min 35mm masonry screw at 50mm from the edges and at approximately 100mm centres</p>
5	AGNI-Shield –13mm thick one side foiled insulating blanket (foil to outside). Minimum 300mm from the wall, both sides of the wall.

#### 4.4.4 Modular installation

AGNI-Box may be installed in modular installation – multiple AGNI-Boxes fixed together through the centre of adjoining sides with min 30mm M5 steel bolt and nut. The maximum size of the modular installation is shown on Figure 12 as follows:

- Two AGNI-Boxes – one on the top of another
- Three AGNI-Boxes - horizontally side-by-side

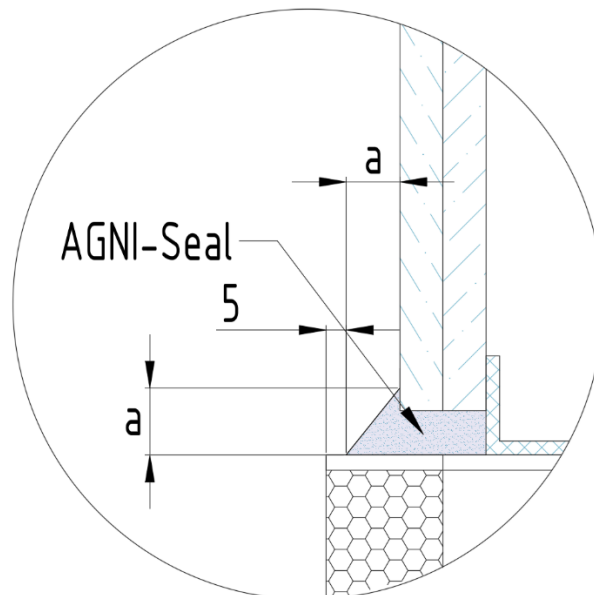


**Figure 12 – Installation detail – options of modular installation**

No.	Item Description
1	Sealant – AGNI-Seal – as per installation details. For all installations – 10mm bead of AGNI-Seal shall be applied around the perimeter of jointing surfaces before fixing AGNI-Boxes together.
2	Steel bolt fixings of the AGNI-Box lid
3	Min M5 Steel bolt and nut fixed through the pre-punched holes in the centre of the AGNI-Box side.

For the horizontal installation, the removable face of the box shall be orientated as shown on Figure 12 to avoid overlapping of the fixings screws.

#### 4.4.5 Fillet/cone detail



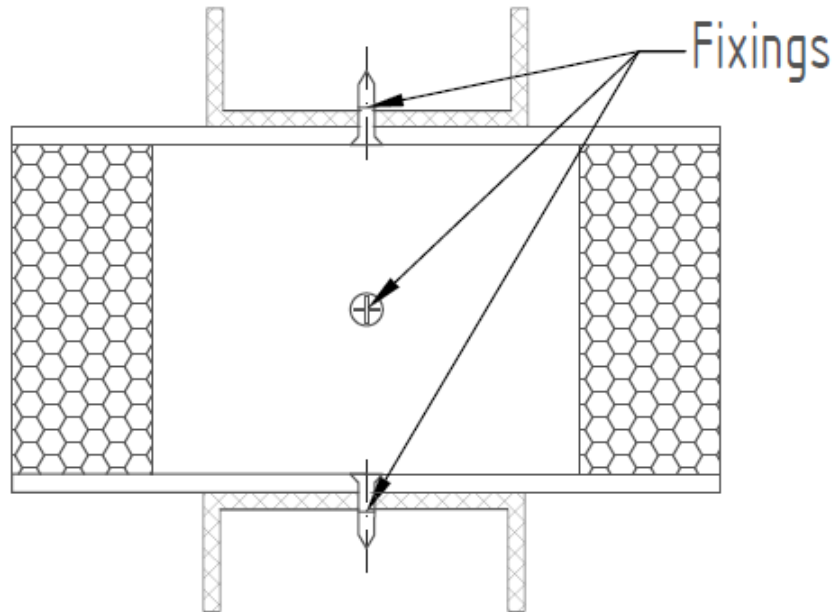
**Figure 13 – Sealant application around the perimeter**

For all installation of the AGNI-Box without AGNI-Shield – AGNI-Seal shall be applied full depth of the plasterboard of the plasterboard walls and minimum 20mm deep other types of the walls outlined in Section 4.2. Minimum sealant cone/fillet size shall be determined by the thickness of the wall as shown on the Fig. 13. Where steel angles are used as fixing, sealant shall be increased to overlap the angles by at least 5mm or applied flush with the edge of AGNI-Box.

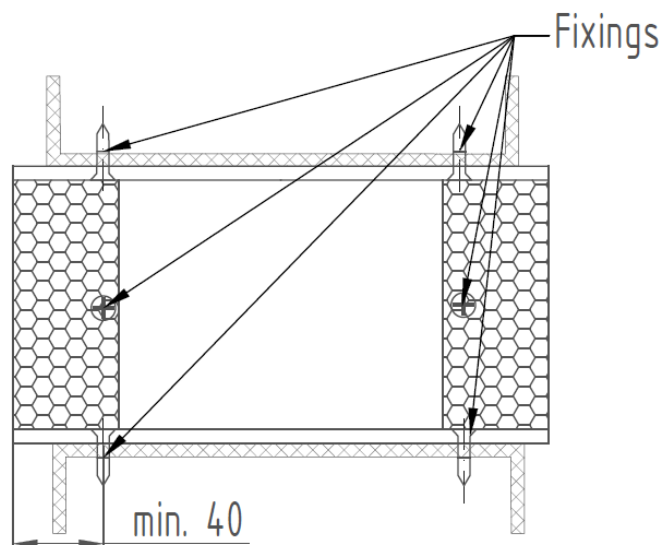
Fig. 13 detail has a steel stud detail as an example; it may be applied to the details A-E as relevant.

#### 4.4.6 AGNI-Box fixing details

AGNI-Box shall be fixed to the supporting construction on each side of the box, including top and bottom, through the centre of each side (Fig. 14a) or offset from the centre (Fig. 14b). Screws may be installed from inside the AGNI-Box or from outside the AGNI-Box and in angle up to  $30^{\circ}$  from the perpendicular line to the installation surface. Fig. 14a and Fig 14b details have a steel stud detail as an example, it may be applied to the details A and B as relevant.



**Figure 14a – Centre line fixing pattern**



**Figure 14b – Offset fixing pattern**



## 4.5 Services in AGNI-Boxes

The following tables provide the summary of the penetration services passing through the AGNI-Box. The services penetrations were tested as single service or as a group of services, where the service configuration differs from the tested configuration the following shall be applied:

- 1 Minimum spacing between the services or groups of services shall be 40mm without an AGNI-Seal cone around the services. Where the 20x20mm cone/fillet is applied around the service the minimum spacing may be reduced to 20mm. The same clearance should be applied between the service and the frame of the AGNI-Box. Same requirements for the spacings applies if the AGNI-Box and services are wrapped with the AGNI-Sheild.
- 2 Service penetrations, tested as a group of services may be reduced by excluding any service from the group.
- 3 In cases where any service penetration requires AGNI-Shield insulation the whole AGNI-Box installation shall be wrapped with AGNI-Shield as described in Section 4.4.1
- 4 Service penetrations which do not require sealant cone/fillet may be installed with sealant cone/fillet, but the reverse does not apply
- 5 The service or group of services specified in the following tables may be used in any configuration provided that the clearance between them is maintained and the performance of the whole AGNI-Box penetration system is limited to the lowest performance of the individual service or group.
- 6 In the tables below, S means a single service and will require clearance.
- 7 In the tables below, G means a group of services, where clearance is not required within the group, but must be maintained from other single services or groups.
- 8 Penetrations not perpendicular to the plane of the element are acceptable, provided the fire-stopping system has similar exposure and dimensions to the tested prototype.

### 4.5.1 Services passing through AGNI-Box – up to -/60/60

Where the AGNI-Box is installed in the substrates limiting it's performance to FRL -/60/60 the following tables shall apply.

**Table 4: Plastic pipes, substrates with FRL -/60/60**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 16mm OD PEX Pipe, WT 2.5mm	-/60/-	-/60/60	-/60/60

(S) Up to 40mm OD PEX Pipe, WT 4-6mm	-/60/-	-/60/-	-/60/60
(S) Up to 50mm uPVC Pipe, WT 2.7mm	-	-/60/60	-/60/60
(G) up to 3 PVC-U pipes up to 25mm OD, WT 2mm	-/60/60	-/60/60	-/60/60
(S) Up to 42.5mm OD CPVC pipe, WT 5.6mm	-	-/60/60	-/60/60
(S) Up to 32mm OD PPR Pipe, WT 3.2mm	-	-/60/60	-/60/60

**Table 5: Composite pipes, substrates with FRL -/60/60**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 16mm OD PE-X/AL/PEX Pipe, WT 2mm	-	-/60/60	-/60/60
(S) Up to 25.2mm OD PE-X/AL/PEX Pipe, WT 3mm	-	-/60/60	-/60/60
(S) Up to 32mm OD PEX/AL/PEX Pipe, WT 3mm	-/60/-	-/60/-	-/60/60
Up to 25.2mm OD PE-X/AL/PEX Pipe, WT 3mm with 17mm Fire retardant nitrile insulation	-	-/60/60	-/60/60
Up to 20mm OD Kelox Pipe, WT 2.7mm	-	-/60/60	-/60/60
Up to 20mm OD Kelox Pipe, WT 2.7mm with 13mm PE insulation	-	-/60/60	-/60/60

**Table 6: Cables, substrates with FRL -/60/60**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(G) Up to 25 TPS (2C+E) Cables, bundle	-/60/60	-/60/60	-/60/60
(G) Up to 25 Fire Alarm Cables (2C 0.75mm <sup>2</sup> , 6.5mm OD), bundle	-/60/60	-/60/60	-/60/60
(G) Up to 25 Data Cables (Cat6, 7.5mm OD), bundle	-/60/60	-/60/60	-/60/60



D1 Cable Configuration on Cable Tray - cable tray was interrupted 50mm before the AGNI-Box	-/60/60	-/60/60	-/60/60
D2 Cable Configuration on Cable Tray - cable tray was interrupted 50mm before the AGNI-Box	-	-	-/60/60
(S) Up to 50mm OD Aluminium Cable	-	-/60/60	-/60/60
(S) One 41.4mm OD 630m <sup>2</sup> XLPE 1C copper cable	-	-/60/60	-/60/60
(S) One 53.8mm OD 185m <sup>2</sup> 3C+E copper cable	-	-/60/60	-/60/60
(G) Up to 3 x 16mm OD 6m <sup>2</sup> 3C+E copper cables	-	-/60/60	-/60/60
(G) Up to 8 x 20.4mm OD 16m <sup>2</sup> 3C+E copper cables	-	-/60/60	-/60/60

**Table 7: Conduits, substrates with FRL -/60/60**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 25mm OD Flexible Conduit (Up to 2 TPS cables)	-	-/60/60	-/60/60
(S) Up to 50mm OD Flexible Conduit (Up to 6 TPS cables)	-	-/60/60	-/60/60
(S) Up to 25mm OD Flexible Conduit (Empty)	-	-/60/60	-/60/60
(S) Up to 50mm OD Flexible Conduit (Empty)	-	-/60/60	-/60/60

**Table 8: Insulated pipes, substrates with FRL -/60/60**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(G) Up to 3 x Pair Coil copper Pipes (up to 16mm and 10mm copper tubes) with 19mm Fire retardant nitrile insulation	-/60/60	-/60/60	-/60/60



(G) 3 x Pair Coil copper Pipes (up to 16mm and 10mm copper tubes) with 19mm Fire retardant nitrile insulation and 3 PVC-U pipes up to 25mm OD, WT 2mm and 3 x (2C+E) Cables	-	-	-/60/60
(G) Up to 3 x Pair Coil copper Pipes (up to 19mm and 10mm copper tubes) with 8mm PE insulation	-	-/60/60	-/60/60
(G) Up to 9 x PE Pair Coil Copper Pipes (up to 19mm and 10mm copper tubes with 8mm PE insulation) and up to 9 PVC-U pipes up to 25mm OD, WT 2mm and up to 9 x (2C+E) Cables	-	-	-/60/60
(S) Up to 50mm OD Type B Copper Pipe with up to 17mm Fire retardant nitrile insulation	-/60/60	-/60/60	-/60/60

**Table 9: Metal pipes, substrates with FRL -/60/60**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 42.6mm OD mild Steel Pipe, WT 3.4mm	-	-/60/60	-/60/60
(S) Up to 48.3mm OD mild Steel Pipe, WT 4mm	-/60/60	-/60/60	-/60/60
(S) Up to 60.5mm OD mild Steel Pipe, WT 3.5mm	-	-/60/60	-/60/60
(S) Up to 27.5mm OD Copper Pipe, Type B	-	-/60/60	-/60/60
(S) Up to 53.5mm OD Copper Pipe, Type B	-	-/60/30	-/60/60
(S) Up to 60.5mm OD stainless Steel Pipe, WT 3.5mm	-	-/60/60	-/60/60

#### 4.5.1 Services passing through AGNI-Box – up to -/120/120

Where the AGNI-Box is installed in the substrates limiting its performance to FRL -/120/120 the following tables shall apply.

**Table 10: Plastic pipes, substrates with FRL -/120/120**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 16mm OD PEX Pipe, WT 2.5mm	-/120/-	-/90/90	-/120/120
(S) Up to 40mm OD PEX Pipe, WT 4-6mm	-/120/-	-/120/-	-/120/120
(S) Up to 50mm uPVC Pipe, WT 2.7mm	-	-/120/120	-/120/120
(G) up to 3 PVC-U pipes up to 25mm OD, WT 2mm	-/120/120	-/120/120	-/120/120
(S) Up to 42.5mm OD CPVC pipe, WT 5.6mm	-	-/120/120	-/120/120
(S) Up to 32mm OD PPR Pipe, WT 3.2mm	-	-/120/120	-/120/120

**Table 11: Composite pipes, substrates with FRL -/120/120**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 16mm OD PE-X/AL/PEX Pipe, WT 2mm	-	-/90/60	-/120/120
(S) Up to 25.2mm OD PE-X/AL/PEX Pipe, WT 3mm	-	-/90/60	-/90/60
(S) Up to 32mm OD PEX/AL/PEX Pipe, WT 3mm	-/120/-	-/120/-	-/120/120
(S) Up to 25.2mm OD PE-X/AL/PEX Pipe, WT 3mm with 17mm Fire retardant nitrile insulation	-	-/90/90	-/90/90
(S) Up to 20mm OD Kelox Pipe, WT 2.7mm	-	-/90/60	-/90/90
(S) Up to 20mm OD Kelox Pipe, WT 2.7mm with 13mm PE insulation	-	-/90/90	-/90/90

**Table 12: Cables, substrates with FRL -/120/120**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(G) Up to 25 TPS (2C+E) Cables, bundle	-/120/120	-/120/120	-/120/120
(G) Up to 25 Fire Alarm Cables (2C 0.75mm <sup>2</sup> , 6.5mm OD), bundle	-/120/90	-/120/90	-/120/120
(G) Up to 25 Data Cables (Cat6, 7.5mm OD), bundle	-/120/90	-/120/90	-/120/120
D1 Cable Configuration on Cable Tray - cable tray was interrupted 50mm before the AGNI-Box	-/120/90	-/120/90	-/120/120
D2 Cable Configuration on Cable Tray - cable tray was interrupted 50mm before the AGNI-Box	-	-	-/120/120
(S) Up to 50mm OD Aluminium Cable	-	-/120/90	-/120/120
(S) One 41.4mm OD 630m <sup>2</sup> XLPE 1C copper cable	-	-/120/90	-/120/120
(S) One 53.8mm OD 185mm <sup>2</sup> 3C+E copper cable	-	-/120/90	-/120/120
(G) Up to 3 x 16mm OD 6mm <sup>2</sup> 3C+E copper cables	-	-/120/120	-/120/120
(G) Up to 8 x 20.4mm OD 16mm <sup>2</sup> 3C+E copper cables	-	-/120/90	-/120/120

**Table 13: Conduits, substrates with FRL -/120/120**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 25mm OD Flexible Conduit (Up to 2 TPS cables)	-	-/120/90	-/120/120
(S) Up to 50mm OD Flexible Conduit (Up to 6 TPS cables)	-	-/120/120	-/120/120
(S) Up to 25mm OD Flexible Conduit (Empty)	-	-/120/120	-/120/120



(S) Up to 50mm OD Flexible Conduit (Empty)	-	-/120/120	-/120/120
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**Table 14: Insulated pipes, substrates with FRL -/120/120**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(G) Up to 3 x Pair Coil copper Pipes (up to 16mm and 10mm copper tubes) with 19mm Fire retardant nitrile insulation	-/120/90	-/120/90	-/120/90
(G) 3 x Pair Coil copper Pipes (up to 16mm and 10mm copper tubes) with 19mm Fire retardant nitrile insulation and 3 PVC-U pipes up to 25mm OD, WT 2mm and 3 x (2C+E) Cables	-	-	-/120/120
(G) Up to 3 x Pair Coil copper Pipes (up to 19mm and 10mm copper tubes) with 8mm PE insulation	-	-/90/90	-/90/90
(G) Up to 9 x PE Pair Coil Copper Pipes (up to 19mm and 10mm copper tubes with 8mm PE insulation) and up to 9 PVC-U pipes up to 25mm OD, WT 2mm and up to 9 x (2C+E) Cables	-	-	-/90/90
(S) Up to 50mm OD Type B Copper Pipe with up to 17mm Fire retardant nitrile insulation	-/120/90	-/120/90	-/120/120

**Table 15: Metal pipes, substrates with FRL -/120/120**

Service	No Sealant Cone No AGNI-Sheild	With Sealant Cone No AGNI-Sheild	No Sealant Cone, With AGNI-Sheild
(S) Up to 42.6mm OD mild Steel Pipe, WT 3.4mm	-	-/120/90	-/120/120
(S) Up to 48.3mm OD mild Steel Pipe, WT 4mm	-/120/60	-/120/60	-/120/120



(S) Up to 60.5mm OD mild Steel Pipe, WT 3.5mm	-	-/120/60	-/120/120
(S) Up to 27.5mm OD mild Copper Pipe, Type B	-	-/120/60	-/120/120
Up to 53.5mm OD Copper Pipe, Type B	-	-/120/30	-/120/120
(S) Up to 60.5mm OD stainless Steel Pipe, WT 3.5mm	-	-/120/60	-/120/120



## 5. Validity of the assessment

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The assessment report is valid till 11/07/2030.

Any further variations with regard to size, construction details, stresses, edge, or end conditions other than those identified in this report may invalidate the conclusions drawn in this report.

This Assessment does not provide an endorsement by FTSL of the actual data provided. The report is subject to the accuracy and completeness of information supplied.

The conclusions of this report may be used to directly assess the fire resistance performance under such conditions, but it should be acknowledged that a single test method will not provide a full assessment of the product under all fire conditions.

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

This Assessment can only, therefore, relate to the actual prototype test specimens, testing conditions, and methodology provided in the supporting data and does not imply any performance abilities of constructions of subsequent manufacture.

This Assessment is based on the information provided and experience available at the time of writing. The published procedures for the conduct of tests and the assessment of test results are subject to constant review and improvement, and it is recommended that this document be reviewed on or before the stated expiry date. If contradictory evidence becomes available to the assessing authority, the assessment will be unconditionally withdrawn, and the report sponsor will be notified in writing. Similarly, the assessment should be re-evaluated if the assessed construction is subsequently tested, since actual test data is deemed to take precedence.

The information contained in this document shall not be used for the assessment of variations other than those in the conclusions above. This document is valid, provided no modifications are made to the systems described in this document.

All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.

## 6. Authority

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By using this document as evidence of compliance of performance, the applicant(s) confirms 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, and;
- They agree to withdraw this assessment from circulation should the component or element of the structure be subject to a fire test by a recognized test authority in accordance with the standard against which this assessment is being made, and the results are not in agreement with this assessment, and;
- 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 testing authority to withdraw the assessment.

This assessment may only be reproduced in full without modifications by the sponsor. Copies, extracts, or abridgements of this report in any form shall not be published by other organisations or individuals without the permission of FTSL.

## Appendix A – Discussion

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### **Separating element**

The fire performance of AGNI-Boxes has been evaluated across a range of wall systems, with results indicating consistent fire resistance levels suitable for various construction types. The following discussion outlines test results and likely performance if tested in accordance with requirements of AS1530.4-2014.

AGNI-Boxes were subjected to fire resistance testing in several configurations, incorporating 2x13mm fire-rated (FR) plasterboard. Specifically, tests PF24097, PF24126, PF24147, and PF24081 demonstrated that when installed in this configuration (total wall thickness of 116mm), the AGNI-Boxes achieved a fire resistance rating of -/120/120. Given the material properties of concrete or masonry construction, it is considered a conservative and reasonable assumption that AGNI-Boxes would achieve equivalent performance (-/120/120) if installed in concrete or masonry walls with a minimum thickness of 116mm.

Further testing (PF24152) was conducted in a wall constructed of 1x13mm FR plasterboard, achieving a fire resistance rating of -/60/60. The total wall thickness in this case was 90mm. Based on comparative material characteristics, it is again conservative to expect that concrete or masonry walls of equal or greater thickness ( $\geq 90\text{mm}$ ) would provide similar or improved performance.

Test PF24145 evaluated AGNI-Box performance in a 75mm Hebel wall system, yielding a fire resistance rating of -/120/120. Due to the relatively lower density and thermal performance of Hebel compared to concrete or masonry, it is conservative to project that the AGNI-Box would meet or exceed this rating in aerated concrete panels walls of at least 75mm thickness and  $\pm 15\%$  variation in density (433.5- 586.5kg/m<sup>3</sup>). This does not cover walls having steel shell for the aerated concrete core.

These comparisons provide a basis for extrapolating AGNI-Box performance to other typical construction types, particularly those involving concrete or masonry, under comparable installation conditions.

Permissible variations of AS1530.4-2014 allows the results obtained from framed wall systems to be applied to similar walls having studs of the same material with sizes greater than the tested prototype and results obtained from a prototype test may be applied to framed wall systems of similar construction but having thicker facings of the same material applied to the studs.

AGNI-Boxes were tested using steel stud framing with internal and external fixings. It is recognised that steel stud framing deflects more than timber stud framing and exposes the system to more severe conditions. However it is considered that timber studs are combustible and may jeopardise the performance of the AGNI-Box if used as the supporting framing. In the opinion of the testing laboratory, in cases where the aperture in timber framing is lined with the same quantity of plasterboard as the main wall construction this construction is likely to achieve similar results if tested to the

requirements of AS1530.4-2014 provided the wall has established a similar or better fire resistance level.

It was noted, that due to the 200mm depth of the AGNI-Box, the maximum overall thickness of the separating element is limited to the depth of the AGNI-Box.

### **Installation**

In all fire resistance tests of the AGNI-Box, it was fixed to the additional framing within the separating element. It was observed that it was fixed with either screws to framing or to the external steel angles which are fixed to the framing within the wall.

In tests PF24097, PF24126, PF24147, and PF24081, AGNI-Boxes were installed within apertures framed using 64mm steel studs. The AGNI-Boxes were mechanically secured to the steel frame using 41mm screws, with one screw installed on each side (top, bottom, left, and right) to ensure stability and consistent load transfer across the assembly.

A similar installation method was tested in test PF24152 - 64mm steel studs were used to form the aperture framing, and the AGNI-Box was fixed using 41mm screws on each of its four sides.

In the test PF24145, conducted in a Hebel wall system, a different fixing method was used. Two 200mm long 30mm x 30mm x 1.83mm BMT 90° steel angles were installed at the top and bottom of the AGNI-Box, the sides of the AGNI-Box were not fixed. Steel angles were fixed to both the Hebel wall and the AGNI-Box using hex head screws positioned approximately 50mm from each end of the angle. The annular gap between the AGNI-Box and the separating element was sealed with AGNI-Seal sealant (20mm deep, with no sealant applied behind the steel angles). Additional AGNI-Seal cone was applied around the AGNI-Box. A similar installation method was tested in the test PF24146. Both tested specimens achieved FRL limited by the performance of the separating element -/120/120 for the installation in the Hebel panel and -/60/60 in the modified plasterboard wall.

Based on the above, both methods of fixing the AGNI-Box to the wall achieved results limited by the performance of the separating element. In the opinion of the testing laboratory, the AGNI-Box is likely to achieve similar results if tested fixed to plasterboard or concrete/masonry walls with external steel angles having minimum dimensions 200mm long 30mm x 30mm x 2mm BMT. It shall be considered that the external brackets shall overlap the separating element by at least 50mm and shall be covered by the sealant cone.

These installation methods demonstrate the adaptability of AGNI-Boxes to a variety of substrates while maintaining consistent mechanical fixing and firestopping practices. The repeated use of defined fixing distances and sealant profiles provides confidence in the reproducibility and performance of the installed systems across different construction scenarios.

It was confirmed in the several tests, that the AGNI-Box was installed on the top of the testing zone resulting in a furnace pressure of 18-20 Pa during the test at the centreline of the AGNI-Box. This pressure requirements complies with the requirements for the testing of a horizontal separating element, where the pressure of 18-22Pa shall be maintained 100mm below the slab. AGNI-Box specimens installed in that area achieved results stated in this report. In the opinion of accredited testing laboratory – those conditions would comply with the installation below the horizontal separating element.

It was proposed to assess the fixing method of the AGNI-Box to a concrete separating element. Due to the thermal properties of concrete or masonry construction, the results achieved in a plasterboard wall are considered applicable for the concrete wall and fixing with masonry anchors achieves similar or better results than in a plasterboard framed wall. Based on the above, in the opinion of the testing laboratory, the AGNI-Box fixed to the concrete using either minimum 35mm long masonry screws from inside the box, or external steel angles (min 200mm long 30mm x 50mm x 2mm BMT) on the top and bottom of the AGNI-Box will achieve equal or greater performance if tested to AS1530.4-2014. In cases where AGNI-Box is fixed to the concrete soffit, it is reasonable to conclude that the fixing of the AGNI-Box top removable part to the concrete soffit with the masonry screw through pre-punched hole and with at least 30x50x2mm angle on the bottom or with internal screws on the other 3 sides to the framing is likely to achieve equal or greater performance if tested to AS1530.4-2014.

### **AGNI-Shield installation**

It is observed that AGNI-Box configurations with AGNI-Shield generally outperform those without across all service types. The AGNI-Shield installation enhances thermal insulation and delays failure due to insulation properties of AGNI-Sheild. In the opinion of the testing laboratory, services tested without AGNI-Shield installation will achieve at least the same fire resistance level if tested to AS1530.4- 2014 with the AGNI-Sheild applied around all services passing through the AGNI-Box.

In the fire resistance test PF25050 AGNI-Box was tested empty with AGNI-Sheild fixed to concrete soffit using 1mm thick steel builder strap and 35mm masonry screws at 50mm from the ends and at approximately 100mm centres. The length of AGNI-Sheild was 300mm. It was observed, that AGNI-Sheild stayed in place during 123 minutes of the test and the assembly achieved 123 minutes of integrity and insulation. Based on that, it's conservative to conclude, that the AGNI-Boxes with services tested with AGNI-Sheild insulation would achieve at least the same FRL/FRR with this type of installation if tested to AS1530.4-2014.

### **Modular Installation**

In modular installation testing in fire resistance test PF 25005 AGNI-Boxes were tested without services passing through the AGNI-Box for the evaluation of performance of modular installation – maximum of three AGNI-Boxes horizontally and maximum two

AGNI-Boxes vertically. The orientation of the AGNI-Box was identical to the tested single AGNI-Box. All specimens achieved FRL -/120/120. It was observed that the fixing method provides sufficient support, and no major distortion of the steel shell occurred. Based on that, it's reasonable to conclude that the services installed in the modular AGNI-Box construction are likely to achieve at least the same FRL as passing through a single AGNI-Box with or without AGNI-Shield as stated in section 5.4, if tested to AS1530.4-2014.

### **Service penetrations configurations**

Service penetrations through the AGNI-Box were assessed using the guidance of the AS1530.4-2014 Permissible variations and principles of AS4072.1-2005 (r2014) as follows:

- Results obtained with a penetration sealing system protecting the opening around copper pipes may be applied to pipes of the same material and to ferrous metal pipes having outside diameters not greater than the tested diameter, and wall thicknesses not less than the tested thickness
- Where standard configurations are used for electrical and communication cables, the results of tests may be applied to all PVC and XLPE insulated and PVC sheathed power and communication cables with copper conductors, provided the results are for the same penetration sealing system in the same separating element and all of the specimens achieved the designated FRL or greater.
- Penetrations not perpendicular to the plane of the element are acceptable, provided the fire-stopping system has similar exposure and dimensions to the tested prototype.
- The test results on the standard configurations specified in Appendix D of AS 1530.4 shall be considered representative of electrical and communication cabling and are applicable to all PVC-insulated and sheathed power and communications cables with copper conductors. Where the cables were measured separately, the additional evaluation of the performance was conducted for each cable and the performance is limited to the lower performance of the particular cable. It was noted, that the cable tray were stopped 50mm before the AGNI-Box, so the results will apply to interrupted cable trays only.
- Conduits were tested with the maximum and minimum (empty) fill of cables

In cases where the AGNI-Box was tested empty and with the maximum size of the service passing through the AGNI-Box, in the opinion of the laboratory it is reasonable to conclude that a smaller size of the service installed in the AGNI-Box is likely to achieve at least the same performance if tested to AS1530.4-2014.

In cases where the AGNI-Box was tested empty and with the maximum number of bundled services passing through the AGNI-Box, in the opinion of the laboratory it is

reasonable to conclude that a smaller number of the same services installed in the AGNI-Box is likely to achieve at least the same performance if tested to AS1530.4-2014.

It was confirmed in multiple tests, that the distance between the service groups was 30-40mm for an installation without sealant cone and reduced to 20mm with installation with the sealant cone. Based on those results, it is reasonable to conclude that installation of the sealant improves the overall performance of the fire stopping system and 20mm clearance is sufficient if sealant cones are used in practice.

Services passing through the AGNI-Box were evaluated separately, if the service/group had a clear separation of at least 20mm and evaluated as a group in cases where they were closer, than 20mm. It is likely that the services evaluated separately with the 20mm separation will achieve at least the same fire resistance if tested with other tested services. It is considered, that a failure of an individual service may affect the performance of the other penetrating services, so the performance of the AGNI-Box with custom configuration of services shall be limited to the performance of the service with the least rating.

## Appendix B – Supporting data

### FTSL Test PF24081

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 2 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 116mm.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)
2	AGNI-Box 300 (25+25) - Empty	124NF	124NF

The test was terminated at 124 minutes.

### FTSL Test PF24097

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 2 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 116mm.

Specimen #	Service	AGNI-Shield	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box – empty	No	124NF	124NF
2	AGNI-Box – filled	No		
2a	3 x Pair Coil with FR Insulation	No	124NF	92
2b	3 x 20mm Condensate Pipes	No	124NF	124NF
2c	25 x TPS Cables	No	124NF	124NF

3	AGNI-Box – filled	No	124NF	73
3a	50mm Steel Pipe	No	124NF	73
3b	25 x Alarm Cables	No	124NF	114
3c	25 x Data Cables	No	124NF	102
4	AGNI-Box – filled			
4a	32mm PEX/AL/PEX Pipe	No	124NF	9
4b	16mm PEX/AL/PEX Pipe	No	124NF	11
4c	40mm PEX Pipe	No	124NF	12
4d	16mm PEX Pipe	No	124NF	12

The test was terminated at 124 minutes.

### FTSL Test PF24099

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 2 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 116mm.

Specimen #	Service	AGNI-Shield	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box – filled	300mm both sides		
1a	9 x PE Pair Coil	300mm both sides	108	108
1b	9 x 20mm Condensate Pipe	300mm both sides	108	108
1c	9 x TPS Cables	300mm both sides	108	108
2	AGNI-Box – filled	300mm both sides		
2a	3 x FR Pair Coil	300mm both sides	123NF	123NF
2b	3 x Condensate Pipes	300mm both sides	123NF	123NF

2c	3 x TPS Cables	300mm both sides	123NF	123NF
4	AGNI-Box – filled	300mm both sides		
4a	16mm PEX/AL/PEX Pipe	300mm both sides	123NF	123NF
4b	32mm PEX/AL/PEX Pipe	300mm both sides	123NF	123NF
4c	16mm PEX Pipe	300mm both sides	123NF	123NF
4d	40mm PEX Pipe	300mm both sides	123NF	123NF
6	AGNI-Box – filled	300mm both sides		
6a	D2 Cable Configuration on Tray (tray interrupted)	300mm both sides	123NF	123NF

The test was terminated at 123 minutes.

### FTSL Test PF24110

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 2 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 116mm.

Specimen #	Service	AGNI-Shield	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box – filled			
1a	40mm Steel Pipe	No	123NF	107
1b	60mm Steel Pipe	No	123NF	73
1c	25mm Copper Pipe	No	123NF	60
1d	50mm Copper Pipe	No	123NF	36
2	AGNI-Box – filled			
2a	25mm Aluminium Cable	No	123NF	100
2b	30mm Aluminium Cable	No	123NF	101



2c	50mm Aluminium Cable	No	123NF	97
2d	25mm Flexible Conduit (filled)	No	123NF	92
3	AGNI-Box – filled			
3a	50mm Flexible Conduit (empty)	No	123NF	123NF
3b	50mm Flexible Conduit (filled)	No	123NF	123NF
3c	50mm PVC Pipe	No	123NF	123NF
3d	25mm Flexible Conduit (empty)	No	123NF	123NF
4	AGNI-Box – filled			
4a	16mm PEX/AL/PEX Pipe	No	116	81
4b	25mm PEX/AL/PEX Pipe	No	116	69
4c	16mm PEX Pipe	No	116	91
4d	25mm PEX Pipe	No	116	12
5	AGNI-Box - Filled			
5a	D1 (a) copper cable	300mm both sides	123NF	123NF
5b	D1 (b) copper cables	300mm both sides	123NF	123NF
5c	D1 (c) copper cables	300mm both sides	123NF	123NF
5d	D1 (d) copper cables	300mm both sides	123NF	123NF
6	AGNI-Box – filled			
6a	D1 (a) copper cable	No	123NF	93
6b	D1 (b) copper cables	No	123NF	106
6c	D1 (c) copper cables	No	123NF	123NF
6d	D1 (d) copper cables	No	123NF	114

The test was terminated at 123 minutes.



## FTSL Test PF24126

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 2 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 116mm.

Specimen #	Service	AGNI-Shield	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box - filled	300mm both sides		
1a	40mm Steel Pipe	300mm both sides	122NF	122NF
1b	60mm Steel Pipe	300mm both sides	122NF	122NF
1c	25mm Copper Pipe	300mm both sides	122NF	122NF
1d	50mm Copper Pipe	300mm both sides	122NF	122NF
2	AGNI-Box - filled	300mm both sides		
2a	25mm Aluminium Cable	300mm both sides	122NF	122NF
2b	30mm Aluminium Cable	300mm both sides	122NF	122NF
2c	50mm Aluminium Cable	300mm both sides	122NF	122NF
2d	25mm Flexible Conduit (filled)	300mm both sides	122NF	122NF
3	AGNI-Box - filled	300mm both sides		
3a	50mm Flexible Conduit (empty)	300mm both sides	122NF	122NF
3b	50mm Flexible Conduit (filled)	300mm both sides	122NF	122NF
3c	50mm uPVC Pipe	300mm both sides	122NF	122NF
3d	25mm Flexible Conduit (empty)	300mm both sides	122NF	122NF
4	AGNI-Box - filled	300mm both sides		

4a	25mm Copper Pipe (with Armaflex insulation)	300mm both sides	122NF	122NF
4b	50mm Copper Pipe (with Armaflex insulation)	300mm both sides	122NF	122NF
4c	32mm PPR Pipe	300mm both sides	122NF	122NF
4d	32mm CPVC Pipe	300mm both sides	122NF	122NF
5	AGNI-Box – filled	No		
5a	25mm Copper Pipe (with Armaflex insulation)	No	122NF	104
5b	50mm Copper Pipe (with Armaflex insulation)	No	122NF	96
5c	32mm PPR Pipe	No	122NF	122NF
5d	32mm CPVC Pipe	No	122NF	122NF
6	AGNI-Box– filled	300mm both sides		
6a	TPS Cable Bundle (x 25)	300mm both sides	122NF	122NF
6b	Data Cable Bundle (x 25)	300mm both sides	122NF	122NF
6c	Alarm Cable Bundle (x 25)	300mm both sides	122NF	122NF

The test was terminated at 122 minutes.

### FTSL Test PF24127

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 2 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 116mm.

Specimen #	Service	AGNI-Shield	Actual Integrity (min)	Actual Insulation (min)
2	AGNI-Box (empty)	300mm both sides	124NF	124NF
3	AGNI-Box - filled	No		



3b	3 x PE Pair Coil (bundle)	No	100	100
4	AGNI-Box– filled	300mm both sides		
4a	Kelox with insulation	300mm both sides	112	112
4b	Kelox (bare)	300mm both sides	112	112
4c	3 x PE Pair Coil (bundle)	300mm both sides	112	101
5	AGNI-Box – filled	No		
5a	Kelox with insulation	No	100	97
5b	Kelox (bare)	No	100	66
5c	25mm Pex/Al/Pex Pipe with Armaflex	No	100	100

The test was terminated at 124 minutes.

### FTSL Test PF24145

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 75mm Hebel Power Panel separating element. The total thickness of the separating element was 75mm.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box (empty)	123NF	123NF

The test was terminated at 123 minutes.



## FTSL Test PF24146

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 25mm thick vertical Shaft liner with a 16mm fire-rated plasterboard separating element. The total thickness of the separating element was 41mm.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box (empty)	67NF	67NF

The test was terminated at 67 minutes.

## FTSL Test PF24152

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 26/02/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 1 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 90mm.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box (empty)	63NF	63NF

The test was terminated at 63 minutes.

## FTSL Test PF25005

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 07/03/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud frame, lined with 2 x 13mm fire-rated plasterboard on each side of the separating element. The total thickness of the separating element was 116mm.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)
1	3 x AGNI-Boxes (horizontally joined)	123NF	123NF
2	2 x AGNI-Boxes (vertically joined)	123NF	123NF

The test was discontinued at 123 minutes.

### FTSL Test PF25050

The test was conducted as per AS 1530.4-2014 Section 10: Service penetrations and control joints & AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints on 13/06/2025. No departures from the testing method occurred.

Service penetrations were tested passing through a 64mm steel stud framed wall with two layers of 13mm FR Plasterboard on both sides. AGNI-Box was installed to the concrete soffit with AGNI-Shield insulation.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)
1	AGNI-Box 350 (empty) with AGNI-SHIELD Insulation	123NF	123NF

The test was terminated at 123 minutes.