REGULATORY INFORMATION REPORT

The fire resistance performance of timber framed walls lined with plasterboard if tested in accordance with AS1530.4-2014

Report No:

RIR 22567A-05

Report Sponsor:

Forest and Wood Products Australia Limited
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1 INTRODUCTION

This report contains the minimum information sufficient for regulatory compliance in accordance with AS1530.4-2014 Clause 2.16.3 and refers to the Assessment Report EWFA 22567A-05.

A review of the referenced assessments report (EWFA 22567A-05) supporting the fire-rated timber construction, as described in the WoodSolutions Technical Design Guides 1, 2 and 3 (previously known as MRTFC manuals) and 37 indicate that they are based upon a char factor methodology which links the structural design to the fire design for load bearing wall frame construction.

The proposed approach for the referenced assessment is to determine the capacity of the proposed wall constructions under service loading and under fire loading thereby confirming for every possible combination of service load and fire load the capacity that the fire resistance performance is not detrimentally affected. This approach eliminates the need for the user to calculate the structural capacity of the wall framing for the fire load case as it has already been checked.

Three plasterboard manufacturers have provided load bearing test reports for single and double stud wall with 1 x 16mm each side and 2 x 13mm each side that achieves an FRL of 60/60/60 and 90/90/90 respectively.

The referenced assessment report analyses this data and load demand on the studs and presents an assessment of the likely fire resistance performance of timber framed walls designed in accordance with AS1684.1-1999, AS1720.3-2016 and AS1720.1-2010 and lined with plasterboard if tested in accordance with AS1530.4-2014.

The tested prototypes described in Section 2 of this report, when subject to the proposed variations described in Section 3, are to perform satisfactorily if tested in accordance with the referenced test method described in Section 4. The conclusions of the report are summarised in Section 5.

The validity of this report is conditional on compliance with Sections 6, 7 and 8 of the report.

2 TESTED PROTOTYPES

The referenced assessment report is based on the following full-scale fire resistance tests:

FSV 187- was a test of a loadbearing double timber stud wall lined on each side with one layer of 16mm CSR and Boral fire grade plasterboard and tested in accordance with AS1530.4-1990

FSV 0189- was a test of a loadbearing double timber stud wall lined on each side with two layers of 13mm CSR and Boral fire grade plasterboard and tested in accordance with AS1530.4-1990.

FSV 2273- was a test of a loadbearing single timber stud wall lined on each side with one layer 16mm Lafarge Fireshield and tested in accordance with AS1530.4-1990. Supplementary reference is also made to various other tests that incorporate various framing configuration and plasterboard linings as listed below:

Supplementary reference is made to the following reports:

Report Reference	Sponsor
FT41-97	CSR Gyprock Plasterboard
FT44-97	CSR Gyprock Plasterboard
BWA 2314601	Boral Plasterboard
BWA 2314600	Boral Plasterboard
BWA 2259103	Lafarge Plasterboard (Knauf Plasterboard)
BWA 2259104	Lafarge Plasterboard (Knauf Plasterboard)
FAR 96/995 Issue 2	Lafarge Plasterboard (Knauf Plasterboard)
FCO 1708	Forest and Wood Products Australia Limited

3 VARIATION TO TESTED PROTOTYPES

3.1 PROPOSED LOADBEARING DOUBLE & STAGGERED STUD WALL FOR 60/60/60

The proposed double & staggered stud wall construction shall be as tested in FSV 0187 and may be subject to the following optional variations:

- 10mm cavity between frames in lieu of the 25mm cavity in the test
- The omission of bulk insulation or, the addition of bulk insulation such as Glasswool, Rockwool and polyester in one or both stud cavities, in lieu of the single layer tested.
- Wall framing shall be a minimum of 70mm deep and 35mm wide designed in accordance with AS1684.1-1999, AS1720.3-2016, AS1170-2002 and AS1720.1-2010 as appropriate.
- Optional use of CSR, Boral or Lafarge 16mm Fire Grade Plasterboard.
- Half the wall shall be replaced with brick veneer construction, otherwise tested or assessed for an FRL of 60/60/60 or -/60/60 as required.
- Optional use of structural hardwood and softwood sawn timber products, and glued laminated timber and laminated veneer lumber (LVL) engineered wood products fabricated with phenol, resorcinol, phenol-resorcinol or polyphenolic glues as per clause 1.4.2 of AS1720.4-2006. All structural timber used in accordance with this assessment report shall have the equivalent or greater density and structural properties.

3.2 PROPOSED LOADBEARING DOUBLE & STAGGERED STUD WALL FOR 90/90/90

The proposed double& staggered stud wall construction shall be as tested in FSV 0189 and may be subject to the following optional variations:

- 10mm cavity between frames in lieu of the 25mm cavity in the test
- The omission of bulk insulation or the addition of bulk insulation such as Glasswool, Rockwool and polyester in one or both stud cavities, in lieu of the single layer Glasswool tested.
- Wall Framing shall be a minimum of 70mm deep and 35mm wide thick designed in accordance with AS1720.3-2016, AS1684.1-1999, AS1170-2002 and AS1720.1-2010 as appropriate.
- Optional use of CSR, Boral or Lafarge 2 x 13mm Fire Grade Plasterboard.
- Half the wall be replaced with veneer construction, otherwise tested or assessed for an FRL of 90/90/90 or -/90/90 as required.
- Optional use of structural hardwood and softwood sawn timber products, and glued laminated timber and laminated veneer lumber (LVL) engineered wood products fabricated with phenol, resorcinol, phenol-resorcinol or polyphenolic glues as per clause 1.4.2 of AS1720.4-2006. All structural timber used in accordance with this assessment report shall have the equivalent or greater density and structural properties.

4 REFERENCED TEST PROCEDURES

The referenced assessment report is prepared with reference to the requirements of AS 1530.4–2014 and AS3700 – Masonry Structures with regard to masonry ties.

Additional reference is made to AS1720.3-2016, AS1170-2002, AS1720.1-2010, AS1684.1-1999, AS1170-2002 and AS1720.4-2006 as appropriate.

5 FORMAL ASSESSMENT SUMMARY

Based on the discussion presented in the referenced assessment report, it is the opinion of this Accredited Testing Laboratory that if the tested prototype described in Section 2 had been modified within the scope of Section 3, it will achieve the fire resistance level (FRL) as stated below in if tested in accordance with the test method referenced in Section 4 and subject to the requirements of Section 7:

Table 1 – Summary of Assessed Construction

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>1</td><td>Proposed loadbearing single, staggered and double stud framing designed in accordance with AS1684.1-1999 & AS1720.3-2016; with studs at maximum centres of 600mm, with the following linings:
<table>
<tr><th>Minimum Stud Size</th><th>16mm CSR Fyrchek</th><th>16mm Lafarge Fireshield</th><th>16mm Boral Firestop</th></tr>
<tr><td>70 x 35 MGP 10</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>70 x 45 MGP 10</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>70 x 35 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>70 x 45 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 35 MGP 10</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 45 MGP 10</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 35 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 45 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
</table></td></tr>
<tr><td>2</td><td>Proposed loadbearing single, staggered and double stud framing designed in accordance with AS1720.3-2016 & AS1684.1-1999; with studs at maximum centres of 600mm, with the following linings:
<table>
<tr><th>Minimum Stud Size</th><th>2 x13mm CSR Fyrchek</th><th>2 x13mm Lafarge Fireshield</th><th>2 x13mm Boral Firestop</th></tr>
<tr><td>70 x 35 MGP 10</td><td>Yes</td><td>No</td><td>Yes</td></tr>
<tr><td>70 x 45 MGP 10</td><td>Yes</td><td>No</td><td>Yes</td></tr>
<tr><td>70 x 35 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>70 x 45 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 35 MGP 10</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 45 MGP 10</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 35 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>90 x 45 F5</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
</table></td></tr>
<tr><td>3</td><td>Fire grade plasterboard otherwise installed in accordance with manufacturers' recommendations:
1 x 16mm CSR Fyrchek Plasterboard or,
1 x 16mm Boral Firestop Plasterboard or,
1 x 16mm Lafarge Fireshield Plasterboard</td></tr>
<tr><td>4</td><td>Fire grade plasterboard otherwise installed in accordance with manufacturers' recommendations:
2 x 13mm CSR Fyrchek Plasterboard or,
2 x 13mm Boral Firestop Plasterboard or,
2 x 13mm Lafarge Fireshield Plasterboard</td></tr>
</table>

5	Brick veneer wall, otherwise tested or assessed for an FRL of 60/60/60 or -/60/60 as required
6	Brick veneer wall, otherwise tested or assessed for an FRL of 90/90/90 or -/90/90 as required
7	Masonry ties between wall and framing; meeting the appropriate requirements of AS3700.
8	Double frame separation of 10mm minimum.
9	Optional use of structural hardwood and softwood sawn timber products, and glued laminated timber and laminated veneer lumber (LVL) engineered wood products fabricated with phenol, resorcinol, phenol-resorcinol or polyphenolic glues as per Clause 1.4.2 of AS1720.4-2006. All structural timber used in accordance with this assessment report shall have the equivalent or greater density and structural properties.

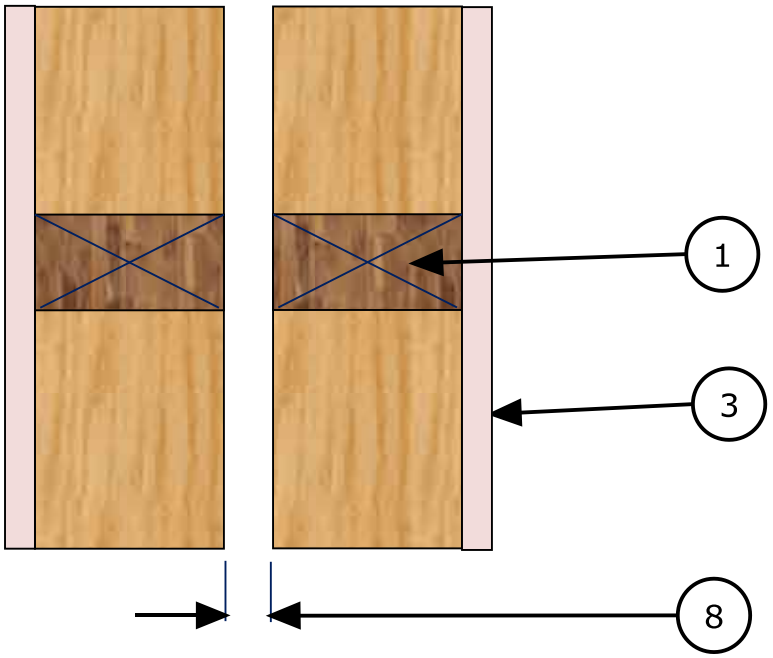

Figure 1 – Double Stud Walls for FRL of 60/60/60

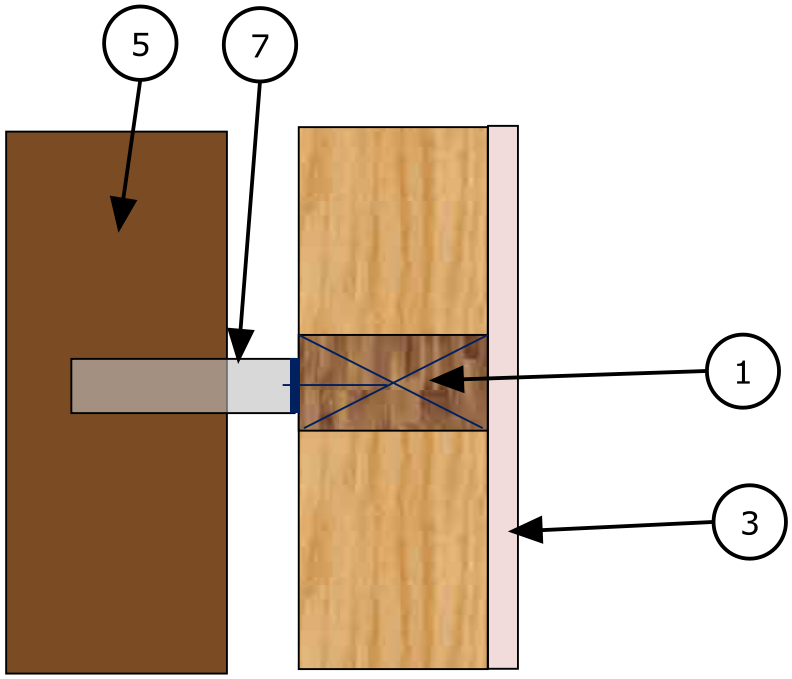

Figure 2 – Brick veneer wall for an FRL of 60/60/60

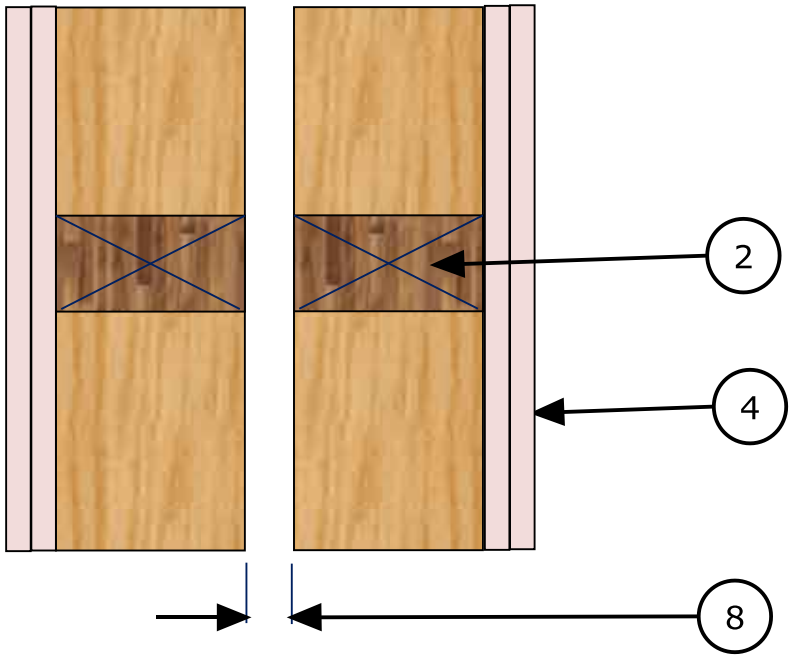

Figure 3 – Double stud wall for an FRL of 90/90/90

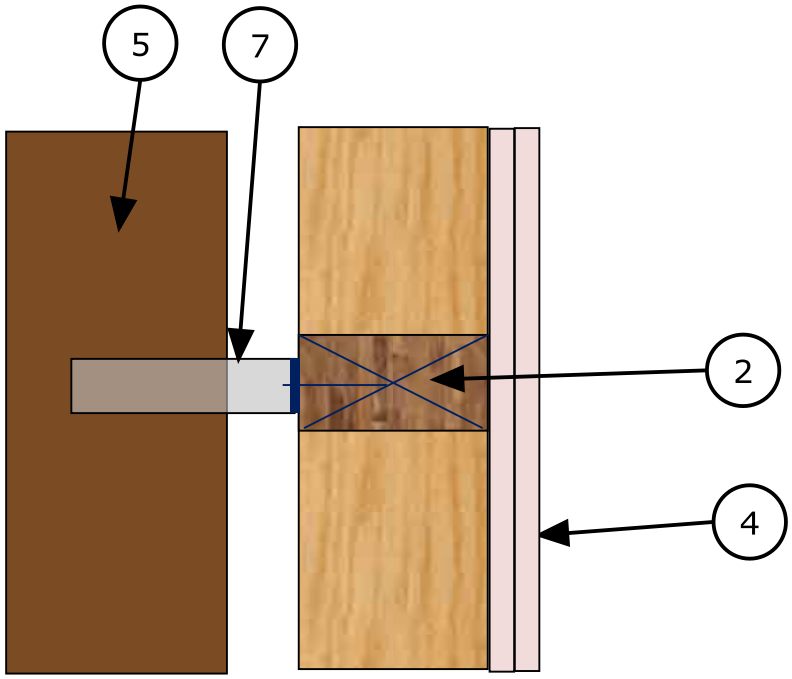

Figure 4 – Brick veneer walls for an FRL of 90/90/90

6 DIRECT FIELD OF APPLICATION

The application of the results of this assessment is to loadbearing wall resisting fire from either direction. The results of this assessment are applicable to structures that support independent structure above and require support from each timber frame for the duration of the FRL period.

The results of the assessment report are based on actual test data and the scope is necessarily limited to the specifications indicated Section 3 and discussed in the Appendices of the assessment.

7 REQUIREMENTS

The referenced assessment report details the methods of construction, test conditions and assessed results of the specific elements of construction described herein been tested in accordance with AS 1530.4–2014.

The surround wall and floor structure shall be capable of providing effective vertical support to the base of the proposed construction and lateral support to the top of the proposed construction for the required fire resistance period (FRL).

The tested construction incorporated framing ties between each timber frame at the periphery as a minimum, it is required that framing ties be provided at the top and bottom of each wall if the frames are not otherwise fixed together at that location.

Any further variations with respect to size, constructional details, loads, stresses, edge or end conditions, other than those identified in the referenced assessment report, may invalidate the conclusions drawn in the referenced assessment report.

8 VALIDITY

The referenced assessment report does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products supplied.

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

Because of the nature of fire resistance 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.

The referenced assessment report can therefore only relate only to the actual prototype test specimens, testing conditions and methodology described in the supporting data, and does not imply any performance abilities of constructions of subsequent manufacture.

The referenced assessment report 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 the subject of constant review and improvement and it is recommended that the referenced assessment report be reviewed on or, before, the stated expiry date.

The information contained in the referenced assessment report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in the referenced assessment report. All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.

9 AUTHORITY

9.1 APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

By using this report as evidence of compliance or 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 structure to their knowledge be 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, 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, agree to ask the assessing authority to withdraw the assessment.

9.2 GENERAL CONDITIONS OF USE

This report may only be reproduced in full without modifications by the report sponsor. Copies, extracts or abridgments of this report in any form shall not be published by other organisations or individuals without the permission of Exova Warringtonfire Aus Pty Ltd.

9.3 AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

Prepared by:

O. Saad

Reviewed by:

C. M McLean

9.4 DATE OF ISSUE

13/12/2017

9.5 EXPIRY DATE

31/12/2022