

TECHNICAL NOTE

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Date: 1 September 2015

To: **NRG Greenboard Pty Ltd**
32-38 Drover Drive
West Burleigh Q4220

Attention: Dean Payne

From: Glen Copelin

**RE: NRG GREENBOARD
ACOUSTIC OPINIONS OF EXTERNAL NRG WALL SYSTEMS**

NV Engineers have conducted calculations to determine the required wall systems constructions that incorporate NRG Greenboard to achieve the applicable acoustic ratings that comply with Noise Categories 2 and 3 in accordance with MP4.4 *Buildings in a Transport Noise Corridor*.

Previous acoustic laboratory testing of the standard 60mm Greenboard system achieved R_w 35 (Ref: GC/06/5809.tst). These test results, in conjunction with theoretical calculations, have been used to determine the wall constructions to achieve the required acoustic ratings. The calculations are based on the physical properties provided by NRG Greenboard Pty Ltd for polymer modified render and the NRG Greenboard.

1 REQUIRED ACOUSTIC RATINGS

The required external wall ratings for different noise categories as specified in MP4.4 along with references to the NRG Greenboard systems to achieve the required ratings are presented in Table 1.

Table 1: External Wall Ratings from MP4.4

Noise Category	Weighted Sound Reduction Index (R_w)	NRG Greenboard System Reference
Category 1	R_w 35	Test report GC/06/5809.tst
Category 2	R_w 41	See Section 2 below
Category 3	R_w 47	See Section 3 below

2 NOISE CATEGORY 2 (R_w 41)

Based on theoretical calculations the following timber stud and steel stud systems achieve the acoustic rating required for Noise Category 2.

2.1 Timber Studs

- a) External polymer modified render minimum 6mm thick (1.8-2.0g/cm³)
- b) NRG Greenboard minimum 60mm thick (19kg/m³) with all joints and perimeters acoustically sealed
- c) Timber studs either 70mm or 90mm deep. Studs can be spaced at either 450mm or 600mm centres
- d) Glass wool insulation batts R1.5 75mm thick
- e) 2 x layers of 13mm plasterboard (17kg/m²)

2.2 Steel Studs

- a) External polymer modified render minimum 6mm thick (1.8-2.0g/cm³)
- b) NRG Greenboard minimum 60mm thick (19kg/m³) with all joints and perimeters acoustically sealed
- c) Steel studs at least 64mm deep. Studs can be spaced at either 450mm or 600mm centres
- d) Glasswool insulation batts R1.5 75mm thick
- e) 2 x layers of 10mm plasterboard (13kg/m²) or 1 layer of sound rated plasterboard achieving a superficial mass of at least 13kg/m²

3 NOISE CATEGORY 3 (R_w 47)

Based on theoretical calculations the following timber stud and steel stud systems achieve the acoustic rating required for Noise Category 3.

3.1 Timber Studs

- a) External polymer modified render minimum 6mm thick (1.8-2.0g/cm³)
- b) NRG Greenboard minimum 60mm thick (19kg/m³) with all joints and perimeters acoustically sealed
- c) Staggered timber studs with 90mm plate/cavity. Studs can be spaced at either 450mm or 600mm centres

- d) Glasswool insulation batts R1.5 75mm thick
- e) 2 x layers of 13mm plasterboard (17kg/m²)

An alternative to staggered studs would be single 70mm studs fitted with resilient mounts (CSR Gyprock Resilient Mounts or equal) and furring channels with internal linings consisting of 2 x layers of 10mm plasterboard (13kg/m²) or 1 layer of sound rated plasterboard achieving a superficial mass of at least 13kg/m². All other construction details such as the render, Greenboard and insulation would be as above.

3.2 Steel Studs

- a) External polymer modified render minimum 6mm thick (1.8-2.0g/cm³)
- b) NRG Greenboard minimum 60mm thick (19kg/m³) with all joints and perimeters acoustically sealed
- c) Steel studs at least 76mm deep. Studs can be spaced at either 450mm or 600mm centres
- d) Glasswool insulation batts R1.5 75mm thick
- e) 2 x layers of 13mm fire rated plasterboard (21kg/m²)

Yours sincerely,



Glen Copelin
Director
NV Engineers (QLD) PTY LTD

DOCUMENT CONTROL REGISTER

Date	Revision	Prepared	Instructed	Reviewed & Authorised
20.08.15	0	GC	GC	GC
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