



Project: Royal Darwin Hospital - Oncology Hospice (short stay facility)

Brief

The rooms needed more speech privacy than the current walls provided.

The existing walls were 10mm plasterboard on 90mm steel studs with no insulation. The predicted performance of the existing walls was calculated by Ultrafonic to be DnT,w 27db, this included a 2 to 3 dB flanking allowance for high-set louvres in the room.

Proposed Options

The predicted* performance of the proposed options were calculated by Ultrafonic to be as follows:

- Option 1 - Add two layers of 10mm plasterboard to both sides of the wall - predicted performance DnT,w 40
- Option 2 - Add two layers of 10mm plasterboard to one side of the wall and install insulation in the cavity - predicted performance DnT,w 42
- Option 3 - Add one layer of 10mm plasterboard to both sides of the wall and install insulation in the cavity - predicted performance DnT,w 43
- Option 4 - Add one layer of high-density 13mm plasterboard, treated with Green Glue Noiseproofing Compound, to one side of the wall and install insulation in the cavity - measured† performance DnT,w 43 (Ctr -2dB)

* Estimated using INSUL to calculate Rw, subtracting 5dB for lab to field test adjustment (as per BCA), and subtracting 3dB for flanking for high-set louvres in the room.

† Airborne Sound Transmission Loss

Solution

Option 4 was chosen, for lowest overall cost and lowest disruption to the facility. Even though the material costs would be slightly higher, the time-on-site and labour costs would be significantly less.

Note: Upgrading or retrofitting existing walls to achieve improved acoustic isolation, normally involves removing and refitting of cornices, skirting boards, window and door frames, GPOs and other service penetrations. Limiting work to one wall provides significant savings in time, labour and some materials.

Results

Verbal feedback confirmed that the finished wall delivered the desired outcomes for the customer.

Measured Result: $D_{nT,w}$ 43 (Ctr -2dB), which in this situation is approximately equivalent to a wall system rated at R_w 51.

Simon Moore, Aecom was engaged to measure the in field performance of the wall 30 days after construction.