As per the guidelines of NZS 4214:2006 the thermal calculation for 50mm H-grade Polystyrene System (over a 20mm drained cavity) installed over the surface of a 2.4 m high timber framed wall incorporating an R=1.8 wall batt is as follows:

	$R\ (m^2 {}^\circ C/W)$
Rse (exterior surface resistance)………………………………………….	= 0.03
Layer 1 5mm Cement based exterior plaster ……………………………....	= 0.01
Layer 2 50mm H-grade Polystyrene based Cladding (derated by 45%)…....	= 0.78*
Layer 3 For the frame area (studs @ 600 centres – dwangs @ 800)	

     R1 (90mm thick R 1.8 insulation + derated 20mm air space)

$$1.80 + 0.09 = 1.89$$

     R2 (90mm deep timber framing, k = 0.12 W/mK + derated 20mm air space)

$$0.75 + 0.09 = 0.84$$

$$f1 = \frac{(600-47)\ \times\ (2400 - 4\times47)}{600\ \times\ 2400} = 0.849$$

$$f2 = 1 - 0.849 = 0.151$$

$$\frac{1}{Rb} = \frac{f2}{R1} + \frac{f1}{R2} = \frac{0.151}{0.84} + \frac{0.849}{1.89} = 0.63$$

     Therefore $Rb = \dfrac{1}{0.63} = $ ……………………………………………   = 1.59

Layer 4 Internal 9.5mm Plasterboard Lining ………………………….	= 0.05
Rsi (interior surface resistance) ……………………………………...	= 0.09
Total thermal resistance, RT …………………………………………..	= **2.55**

* Based on a thermal conductivity of 0.035 W/mK