

## Green Star – Design & As Built Submission Template

Ensure all prompts shown in **Blue text** have been responded to.

### Design Review / As Built Submission [Delete as appropriate]

**Credit: Thermal Comfort**

**Project Name:** [name]

**Project Number:** GS-[####]

Points available: **3**

Points claimed: [1 to 3]

### Providing Thermal Comfort for Occupants

The project has been designed to achieve high levels of thermal comfort by addressing the following criteria:

Credit Criteria	Description	Points available	Points claimed
<b>1. Thermal Comfort</b>	ASHRAE Standard 55-2010 – within <b>80%</b> Acceptability Limit 1; OR  PMV Modelling – PMV level between <b>±1.0</b> , inclusive; AND/OR  Residential spaces – average NatHERS rating greater than <b>7 Stars</b> .	<b>1</b>	<input type="checkbox"/>
	ASHRAE Standard 55-2010 – within <b>90%</b> Acceptability Limit; OR  PMV Modelling – PMV level between <b>±0.5</b> , inclusive; AND/OR  Residential spaces – average NatHERS rating greater than <b>8 Stars</b> .  Retail spaces – second credit is 'Not Applicable'.	<b>2</b>	<input type="checkbox"/>
	Additional credit not claimed; OR In Work Areas, individual comfort control is provided at the required rates; OR  Residential, hotel and healthcare spaces – 50% of spaces are provided with individual comfort control.  Retail and Industrial spaces – additional credit is 'Not Applicable'.	<b>1</b>	<input type="checkbox"/>
<b>2 Individual Comfort Control</b>			

Please enter the number of points claimed for each criterion, 0 if no points are being claimed or N/A if the criterion is not applicable to the project]

### Thermal Comfort

☐ One point:

- ☐ ASHRAE Standard 55-2010 – within **80%** Acceptability Limit 1; OR
- ☐ PMV Modelling – PMV level between  $\pm 1.0$ , inclusive; AND/OR
- ☐ Residential spaces – average NatHERS rating greater than **7 Stars**.

☐ Two points:

- ☐ ASHRAE Standard 55-2010 – within **90%** Acceptability Limit; OR
- ☐ PMV Modelling – PMV level between  $\pm 0.5$ , inclusive; AND/OR
- ☐ Residential spaces – average NatHERS rating greater than **8 Stars**.
- ☐ Retail spaces – second credit is 'Not Applicable'.

### Individual Comfort Control

- ☐ Additional credit not claimed; OR
- ☐ In Work Areas, individual comfort control is provided at the required rates; OR
- ☐ Residential, hotel and healthcare spaces – 50% of spaces are provided with individual comfort control.
- ☐ Retail and Industrial spaces – additional credit is 'Not Applicable'.

## 1. Thermal Comfort

### 1.1 Thermal Comfort – ASHRAE Standard 55-2010

The project has been designed in accordance with ASHRAE Standard 55-2010. Internal temperatures have been shown to be within [80% or 90%] of the Acceptability Limit 1 and achieved during Hours of Occupancy for [98%] of the year. The project is also targeting IEQ-10 'Individual Comfort Control' which is a prerequisite to this credit.

The Hours of Occupancy were determined to be [X hours to X hours] for the assessed areas.

[Insert hyperlinks to documents which support these claims]

Therefore, as demonstrated above, this project is eligible to achieve [1 or 2] point(s) for achieving internal temperatures within [80% or 90%] of Acceptability Limit 1 for a least 98% of the year's Standard Operating Hours of Occupancy.

## 1.2 Thermal Comfort – Thermal Modelling

Thermal comfort has been designed to achieve the Predicted Mean Vote (PMV) levels, calculated in accordance with ISO7730, during Hours of Occupancy for [98%] of the year using the disclosed clothing, metabolic rate and air velocity values for PMV levels between [ $\pm 1$  or  $\pm 0.5$ ] inclusive.

The following information was used in the modelling [add further rows for spaces with varying requirements, as modelled]:

**Table 1: Modelling Data**

Modelling variable	Information source	Area(s) applied to
Hours of Occupancy		
Clothing value (CLO)		
Metabolic rate (MET)		
Air velocity rate		

**Table 2: Calculating Compliance for Mechanically Air-Conditioned Spaces**

Floor	Zone	Total Area	Percentage of occupied hours with PMV of [ $\pm 1$ or $\pm 0.5$ ]

**Table 3: Calculating Compliance for Mixed Mode Ventilation**

Floor	Zone	Total area (m <sup>2</sup> )	Total Nominated Area meeting natural ventilation requirements of [80% or 90%]	Total Nominated Area meeting mechanical ventilation requirements of [ $\pm 1$ or $\pm 0.5$ ]

[Insert hyperlinks to documents which support these claims]

Therefore, as demonstrated above, this project is eligible to achieve [1 or 2] point(s) for achieving PMV levels between [ $\pm 1$  or  $\pm 0.5$ ], inclusive for a least 98% of the year's Standard Operating Hours of Occupancy.

### 1.3 Thermal Comfort – Deemed to Satisfy

The project meets the HVAC and façade requirements as per the Deemed-to-Satisfy requirements of the Thermal Comfort credit for one point.

HVAC system requirements:

1. Dry Bulb Temperature in space is controlled to minimum [20°C] to maximum [24°C];
2. Relative humidity controlled between [40%] and [60%];
3. The HVAC system has separate internal and perimeter zones with independent temperature control which meet the following maximum zone size requirements (for at least 95% of the nominated area): [85m<sup>2</sup>] perimeter zones, [120m<sup>2</sup>] internal zones. No perimeter zone serves more than one orientation unless the second orientation is negligible (<4m perimeter length).
4. Each HVAC zone contains its own temperature sensor(s);
5. Air velocity is not more than [0.2 m/s] with no supply directed at occupants (unless they have direct control over air flow and/or direction);

Facade requirements:

1. SHGC of façade glazing is [0.3] or lower; OR
2. Maximum solar heat gain through the glass is calculated to be no greater than [250W/m<sup>2</sup>] peak.

[Insert hyperlinks to documents which support these claims]

### 1.4 Thermal Comfort – Residential Spaces

The project contains residential spaces, and the dwellings have achieved an average NatHERS rating of greater than [7 or 8] Stars.

[Insert hyperlinks to documents which support these claims]

## 2. Individual Comfort Control

[Provide an explanation of the HVAC features which have been incorporated that meet the requirements of the credit, clearly delineating the area and space requirements of this criterion]

For residential, hotel or healthcare spaces, [50%] of individual spaces are provided with comfort control that serves that space.

**Table 4: Calculating Compliance for Residential, Hotel or Healthcare Spaces**

Floor	Space Description or Number	Area (m <sup>2</sup> )	Individual Comfort Control in Space [Y/N]

[Insert hyperlinks to documents which support these claims]

## Discussion

[Insert any issues you would like to highlight and clarify to the Assessment Panel]

Author Details:

[Insert name, position and contact details of author]

[Date]

— **Report end** —