# Greenhouse gas Emissions: Non-Residential Fitouts

### Credit 16

### Design Review Submission As Built Submission

|  |  |  |  |
| --- | --- | --- | --- |
| Total Points available: | 14 | Points claimed: | [#] |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Name | Description | Points Available | Points Claimed |
| **16.1** | **Conditional Requirement** | The minimum points’ threshold is met. | CR |  |
| **16.2A** | **GHG Emissions Reduction –Non-Residential Fitouts** | ‘Best practice’ levels of prescriptive performance are achieved for mechanical, hydraulic, lighting services, domestic hot water systems, and all equipment and appliances. | 14 | [#] |
|  | 16.2A.1 Lighting |  | 5 | [#] |
|  | 16.2A.2 Ventilation and air-conditioning |  | 4 | [#] |
|  | 16.2A.3 Domestic hot water systems |  | 1 | [#] |
|  | 16.2A.4 IT equipment |  | 3 | [#] |
|  | 16.2A.5 Appliances and Equipment |  | 1 | [#] |

## Project-specific technical questions (formerly tcs and cirs)

|  |  |
| --- | --- |
| There are no project-specific Technical Questions for this credit. |  |
| There are project-specific Technical Questions for this credit and all responses received from the NZGBC are attached. |  |

## 16.1 conditional requirement

The minimum points’ threshold for the targeted rating is met.

|  |  |  |  |
| --- | --- | --- | --- |
| **Rating targeted** | **Minimum points’ threshold** | **Direct Fossil Fuel Use GHG Emissions Limit** |  |
| 4 Star | **3** | No limit |  |
| 5 Star | **4** | No limit |  |
| 6 Star | **6** | **0%** |  |

## 16.2A credit requirements

16.2A.1 Lighting

|  |  |  |
| --- | --- | --- |
| Criteria Element | Points Available | Points Claimed |
| **Zoning and Switching (fitouts in office or healthcare buildings only)** | Conditional requirement |  |
| **Lighting Power Density** | 3 | [#] |
| **Lighting Control Systems** | 2 | [#] |

### Zoning and Switching (fitouts in office or healthcare buildings only)

The project provides individually switched lighting zones for all individual or enclosed spaces not exceeding 100m2 for [**#**] of the nominated area as listed in the following Tables:

(Switching must be clearly labelled or easily identifiable and easily accessible by building occupants.)

#### Table 1: Individual Lighting Control Zones

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Floor | Zone Reference | Zone Area (m2) | <100m2 (Y/N) | Switch Description |
| [e.g. Ground] | [Reference to Plan] | [m2] | [Y/N] | [Description] |

#### Table 2: Total Compliant Assessable Area of Individual Lighting Control Zones

|  |  |
| --- | --- |
| Total area of compliance zones | (m2) |
| Total Assessable Area (GFA) | (m2) |
| Percent Compliant Assessable Area | (%) |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

### Lighting Power Density

Up to 3 points are awarded where the actual installed aggregate illumination power density is less than the maximum illumination power densities defined in the amendment to NZS 4243:2:2007A1 and the lighting complies with the two conditions outlined below:

* 1 point where the reduction amounts to 20%;
* 2 points where the reduction amounts to 30%;
* 3 points where the reduction amounts to 40%;

#### Table 3: Illumination Power Density Compliance Summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Space Type | NZS 4243:2:2007A1 Maximum Aggregate Illumination Power | Project Achieved Aggregate Illumination Power | Percentage Decrease | Compliant? (Y/N) |
| Whole Fitout | [W] | [W] | [%] | [Y/N] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

### Lighting Control Systems

Up to 2 points are awarded as follows:

* 1 point is awarded where presence detectors are installed in all infrequently used areas to control lighting AND Luminaires switch off automatically when the lighting zones are unoccupied.
* 2 points are awarded where the first point is achieved AND it is demonstrated that an automated, intelligent dimmable lighting system is provided to all Luminaires for 80% of the assessable area.

**Presence Detector and Automatic Switch Off**

#### Table 4: Presence Detector and Automatic Switch Off Compliance Summary

|  |  |  |  |
| --- | --- | --- | --- |
| Floor | Infrequently used areas | Presence Detector | Automatic Switch Off |
| [e.g. Ground] | [Reference to Plan] | **[Y/N]** | **[Y/N]** |

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

**Automated, Intelligent Dimmable Lighting System**

|  |  |
| --- | --- |
| The point for Presence Detector and Automatic Switch Off is targeted |  |

#### Table 5: Automated, Intelligent Dimmable Lighting System Compliance Summary

|  |  |  |  |
| --- | --- | --- | --- |
| Floor | Zone Reference | Zone Area (m2) | Automated, Intelligent Dimmable Lighting System |
| [e.g. Ground] | [Reference to Plan] | [m2] | [Y/N] |

#### Table 6: Total Compliant Assessable Area of automated, intelligent dimmable lighting system

|  |  |
| --- | --- |
| Total Fitout Area | (m2) |
| Total Compliant Area | (m2) |
| Percent Compliant | (%) |

Identify where this information can be found within the supporting documentation provided. These documents must identify the control zone sizes and the luminaire switch(s) and control sensor locations, requirements for automated lighting control must also be evident in contract documents in addition to showing compliance with the National Construction Code

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

16.2A.2 Ventilation and Air-Conditioning

|  |  |
| --- | --- |
| The project is mechanically ventilated |  |
| The project is naturally ventilated |  |
| The project is mix-mode ventilated |  |

### Mechanically Ventilated SPACES

|  |  |  |
| --- | --- | --- |
| Criteria Element | Points Available | Points Claimed |
| Fan motor power and pump power | 1 |  |
| Efficient heat pumps (COP>2.5) | 1 |  |
| Efficient mechanical cooling system | 2 | [#] |
| No supplementary air conditioning or process loads | NA |  |

The project provides compliance improvements as listed in the following Tables for HVAC systems compared with the maximum fan motor power and pump power set in the Submission Guidelines:

**Fan and Pump Power**

For each HVAC fan and pump.

|  |  |
| --- | --- |
| Fitout GFA >500m2 | [Y/N] |

#### Table 7: Fan Power Compliance Summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Space/Floor | Maximum Fan Motor Power per the submission Guidelines (W/m2) | Project Achieved Fan Motor Power (W/m2) | Percentage Decrease | Compliant? (Y/N) |
| [e.g. First Floor] | [W/m2] | [W/m2] | [%] | [Y/N] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

#### Table 8: Chilled Water and Heating Water Pump Power Compliance Summary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Space/Floor | Type | Maximum Pump Power per the submission Guidelines (W/m2) | Project Achieved Maximum Pump Power (W/m2) | Percentage Decrease | Compliant? (Y/N) |
| [e.g. First Floor] | [e.g. Chilled Water/ Heating Water Pump] | [W/m2] | [W/m2] | [%] | [Y/N] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

**Efficient Heat Pumps (COP>2.5)**

|  |  |
| --- | --- |
| 1% NIWA Design Condition | [e.g. 2℃] |

#### Table 9: Heat Pumps Compliance Summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Space/Floor | Heat Pump Name | Number | COP | Data Sheet  *Insert filename below* |
| [e.g. First Floor] | [####] | [e.g. 1-5] | [e.g. 2.5] | [####] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

|  |  |
| --- | --- |
| **Efficient Mechanical Cooling System** 1% NIWA Design Condition | [e.g. 26.8℃] |

#### Table 10: Mechanical Cooling System Compliance Summary

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Space/Floor |  | Chiller Name | Type | Number | COP | Data Sheet  *Insert filename below* |
| [e.g. First Floor] |  | [####] | [e.g. Air Conditioner - Cooling] | [e.g. 1-5] | [e.g. 2.5] | [####] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

### Naturally Ventilated Spaces

Please list any naturally ventilated spaces and describe how they are ventilated.

|  |  |
| --- | --- |
| The provision of natural ventilation openings complies with the requirements of credit *08 Indoor Air Quality*. |  |

The project has demonstrated that [95%] of the nominated area is naturally ventilated in accordance with AS1668.4-2012. It is clearly demonstrated that areas nominated as ‘naturally ventilated’ can be occupied without mechanical ventilation, and that no air-conditioning has been provided.

The following table confirms all naturally ventilated\* occupied spaces pursuing this option:

#### Table 11: Schedule of Naturally Ventilated Areas

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Space/Floor | Nominated Area (m2) | Required Opening Size (m2 open area) | Opening Provided (m2 open area) | Compliant? (Y/N) |
| [e.g. First Floor] | [m2] | [m2] | [m2] | [Y/N] |

#### Table 12: Compliant Area for Naturally Ventilated Spaces

|  |  |
| --- | --- |
| Total Nominated Area | (m2) |
| Total Compliant Area | (m2) |
| Percent Compliant Area | (%) |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

|  |  |  |  |
| --- | --- | --- | --- |
| Summary of SpacesTable 13: Summary of Spaces | | | |
| Space/Floor | Nominated Area (m2) | Compliant with Mechanical Ventilation Requirements (Y/N) | Compliant with Natural Ventilation Requirements (Y/N) |
| [e.g. 1st Floor] | [Mechanical Natural] | [Y/N] | [Y/N] |
| [e.g. Laboratory] |  |  |  |
| [e.g. 2nd Floor] |  |  |  |

Please note: project teams may add more rows as required or use an attachment to display this information.

16.2A.3 Domestic Hot Water

The domestic hot water systems for the fitout are powered by:

|  |  |
| --- | --- |
| Renewable energy [AND/OR] |  |
| Electric heat pump with a minimum coefficient of performance (COP) of 3.5 under design conditions [AND/OR] |  |
| Heat recovered from another process |  |
| No hot water systems provided as part of the fit-out |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

16.2A.4 IT Equipment

**Equipment at workstations**

Equipment at workstations are either laptops (no more than 2 years old), or thin clients (no more than one year old).

[Insert confirmation of IT equipment at workstation type]

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

**Computer monitors, printers and servers**

#### Table 14: Schedule of Computers, Monitors. Printers and Servers

|  |  |  |
| --- | --- | --- |
| Type | Highest energy star rating of the comparable equipment class. | Actual rating |
| [e.g. monitor x] | [e.g. 4] | [e.g. 3] |
| [etc] |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

**Workstation Equipment Standby Setting**

All workstation equipment is set to standby mode after no more than 10 minutes of inactivity, and all workstation equipment is automatically scheduled to turn off at the end of the working day.

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

16.2A.5 appliances and Equipment

#### Table 15: Schedule of Domestic Appliances (covered by Energy Rating Labelling System)

|  |  |  |
| --- | --- | --- |
| Appliance type | Highest energy star rating of the comparable equipment class. | Actual rating |
| [e.g. dishwasher] | [e.g. 4] | [e.g. 3] |
| [etc] |  |  |
|  |  |  |
|  |  |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

#### Table 16: Schedule of Domestic Appliances (not covered by Energy Rating Labelling System)

|  |  |  |  |
| --- | --- | --- | --- |
| Appliance type | Efficiency of comparable appliance/equipment no more than 2 years of age | Efficiency of installed appliances/equipment | Percentage improvement in efficiency |
| [e.g. dishwasher] | [e.g. 26 Wh/use/place setting] | [e.g. 20 Wh/use/place setting] | [e.g. 23%] |
| [etc] |  |  |  |
|  |  |  |  |
|  |  |  |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

DISCUSSION

Outline any issues you would like to highlight and clarify with the Certified Assessor(s).

DECLARATION

I confirm that the information provided in this document is truthful and accurate at the time of completion.

Provide author details, including name, position and email address:

[Date]

––– **Report end** –––