# 11 Light Quality

**Healthy**

## Submission information

Provide the following information for the submission

|  |  |
| --- | --- |
| **Submission type** | Choose an item. |
| **Performance level targeted** | [ ]  Minimum Expectation |
| [ ]  Credit Achievement |
| [ ]  Exceptional Performance |
| **Points targeted** | Click or tap here to enter text. |

#### ***Please ensure the regular occupied area section is completed.***

#### Technical Questions

|  |  |
| --- | --- |
| There are project-specific technical questions for this credit and all responses received from the NZGBC are included in the submission. | Choose an item. |

#### Discussion

Narratives will help the Assessors understand how the project complies with the credit. Please include a narrative below, but note that simply listing the credit requirements is not helpful. Instead, outline any other issues that need to be considered by the Assessment Panel.

Click or tap here to enter text.

#### Changes between Rounds

If applicable, please use the text box below to explain any changes between Round 1 and Round 2. This is an opportunity for the GSAP to describe how they have addressed the Assessors comments in Round 2.

Click or tap here to enter text.

## Submission template

### Minimum Expectation

#### Lighting Comfort

|  |
| --- |
| **Lighting within the building has met the following requirements:** |
| * All LED lighting installed has no observable effect
 |[ ]
| * Light sources must have a minimum Colour Rendering Index (CRI) 85 or higher
 |[ ]
| * Light sources must meet best practice illuminance levels for each task within each space type with a maintained illuminance that meets the levels recommended in AS/NZS 1680.1:2006 series applicable to the project type and including maintenance
 |[ ]
| * The maintained Illuminance values must achieve a uniformity of no less than that specified in Table 3.2 of AS/NZS 1680.1:2006, with a maintenance factor method as defined in AS/NZS 1680.4
 |[ ]
| * All light sources must have a minimum of 3 MacAdam Ellipses a Standard Deviation Colour Matching (SDCM) of 3 or lower.
 |[ ]

## Discussion

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Click or tap here to enter text.

#### Supporting documentation

Identify where evidence supporting the information provided can be found in the documentation.

|  |  |  |
| --- | --- | --- |
| Document name | Document description | Page number(s) |
| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |
| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |
| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |

#### Glare from Light Sources

|  |
| --- |
| **Indicate which compliance method (1, 2 or 3) the project has chosen:** Click or tap here to enter text. |
| **Bare light sources are fitted with means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards.** |
| * Outline how bare light sources have been fitted to obscure the direct light source.

Click or tap here to enter text. |  |
| * Identify any LED luminaires and demonstrate that the Unified Glare Rating (UGR) do not exceed the maximum values in the standard.

Click or tap here to enter text. |  |
| **The nature of the tasks, layouts and surface reflectance in the space are not known.** |
| * Demonstrate that the lighting system complies with the luminaire selection system in AS/NZS 1680.1:2006

Click or tap here to enter text. |  |
| **The Unified Glare Rating (UGR) calculated for the lighting on a representative floor do not exceed the maximum values in AS/NZS 1680.1:2006.** |
| * Outline the calculation procedure for the UGR and any grids that have been nominated.

Click or tap here to enter text. |  |

## Discussion

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| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |

#### Daylight

|  |  |
| --- | --- |
| **The building provides daylight access to building occupants through solutions that exceed the typical relevant, state, or local regulations.** | Choose an item. |
| **Indicate where the following requirements have been met by the building's design (provide references to documentation):** |
| * Maximises the number of occupants that are in or near daylit areas during their daily activities for all building types
 | Click or tap here to enter text. |
| * Ensures regularly occupied areas are in reasonable proximity to glazed façades, windows, or skylights
 | Click or tap here to enter text. |
| * Controls or mitigates glare in the daylit spaces
 | Click or tap here to enter text. |
| * Maximises daylight to spaces that prioritise learning, healing, and living
 | Click or tap here to enter text. |
| * Provides building occupants with unrestricted access to daylit indoor common spaces.
 | Click or tap here to enter text. |
| **Outline the building's daylight, view and glare control strategy.**Click or tap here to enter text. |
| **Provide a simple calculation of the amount of space that has adequate daylight as a proportion of the total regularly occupied areas of the building.**Click or tap here to enter text. |
| **Outline how the daylight design requirements have been assessed.**Click or tap here to enter text. |
| **Outline any barriers to achieving the requirements and the measures taken to mitigate loss of daylight quality for occupants.**Click or tap here to enter text. |  |

## Discussion

Narratives will help the Assessors understand how the project complies with the credit. Please include a narrative below, but note that simply listing the credit requirements is not helpful. Instead, outline any other issues that need to be considered by the Assessment Panel.

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### Credit Achievement

#### Artificial Lighting

|  |  |
| --- | --- |
| **The artificial lighting solution addresses the quality of light in the space, provides highlights and contrasts, and seeks to avoid excessive lighting or overly uniform solutions.** | Choose an item. |
| **Demonstrate that horizontal illuminance levels meet or exceed the recommended levels in AS/NZS 1680 for the relevant task for at least 90% of the GFA.**Click or tap here to enter text. |
| **Demonstrate that at least one wall in the field of view of a regularly occupied area is illuminated to create demonstrable contrast and visual interest.**Click or tap here to enter text. |
| **Demonstrate that vertical illuminance in all regularly occupied workspaces ensure that 50% of the horizontal task illuminance reaches the average eye height for 90% of primary spaces using vertical illuminance calculation grid.**Click or tap here to enter text. |
| **Enter the percentage of primary spaces using vertical illuminance calculation grid.** | Click or tap here to enter text. |
| **Outline any conservative estimates used where illuminance values were unknown.**Click or tap here to enter text. |
| **Indicate where the following requirements have been met in the lighting solution (provide references to documentation):** |
| * Provide for highlights of colour
 | Click or tap here to enter text. |
| * Contrast across multiple spaces
 | Click or tap here to enter text. |
| * Contrast between spaces should not exceed the maximum luminance ratios as defined in AS/NZS 1680.1 for visual task, immediate surrounds, and general surrounds
 | Click or tap here to enter text. |

## Discussion

Narratives will help the Assessors understand how the project complies with the credit. Please include a narrative below, but note that simply listing the credit requirements is not helpful. Instead, outline any other issues that need to be considered by the Assessment Panel.

Click or tap here to enter text.

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#### Daylight

|  |
| --- |
| **Regularly occupied areas across the building receive high levels of daylight.** |
| * Enter the percentage of regularly occupied areas across the building receiving high levels of daylight.
 | Click or tap here to enter text. |
| * Enter the percentage of regularly occupied areas on any floor receiving high levels of daylight.
 | Click or tap here to enter text. |
| * Enter the percentage of regularly occupied areas in any tenancy receiving high levels of daylight.
 | Click or tap here to enter text. |
| * Outline the daylight calculations using daylight autonomy.

Click or tap here to enter text. |
| **Combined living and bedroom areas of each apartment comply with the daylight requirements.** |
| * Enter the percentage of combined living and bedroom areas that comply with daylight requirements.
 | Click or tap here to enter text. |
| * Enter the percentage of each bedroom and living areas with daylight levels present.
 | Click or tap here to enter text. |
| * Outline the daylight calculations using daylight autonomy.

Click or tap here to enter text. |
| **Fixed shading devices are used to reduce glare from sunlight through all viewing facades and skylights.** |
| * Outline the nominated plane for viewing facades.

Click or tap here to enter text. |
| * Outline the nominated plane for skylights.

Click or tap here to enter text. |
| * Demonstrate that the nominated plane is shaded from direct sunlight for 80% of the nominated hours for each day of the autumn and spring equinoxes and the summer and winter solstices.
 | Click or tap here to enter text. |
| **Blinds or screens are used to reduce glare from sunlight through all viewing facades and skylights.** | Click or tap here to enter text. |
| * Demonstrate that blinds or screens provide glare reduction to at least 95% of the area of viewing facades and skylights.

Click or tap here to enter text. |
| * Demonstrate that blinds or screens are controlled by all affected occupants within each individual space.

Click or tap here to enter text. |
| * Demonstrate that blinds or screens have a visual light transmittance of at least 10%.

Click or tap here to enter text. |
| * Outline any automated blinds or screens used and how they are controlled.

Click or tap here to enter text. |
| **Other means are used to reduce glare from sunlight through all viewing facades and skylights.** Click or tap here to enter text. |  |
| * Demonstrate that the modelling used results in a reduction of glare equivalent to that achieved by the prescriptive methods.

Click or tap here to enter text. |

## Discussion

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| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |

### Exceptional Performance

#### Daylight

|  |
| --- |
| **Regularly occupied areas across the building receive high levels of daylight.** |
| * Enter the percentage of regularly occupied areas across the building receiving high levels of daylight.
 | Click or tap here to enter text. |
| * Enter the percentage of regularly occupied areas on any floor receiving high levels of daylight.
 | Click or tap here to enter text. |
| * Enter the percentage of regularly occupied areas in any tenancy receiving high levels of daylight.
 | Click or tap here to enter text. |
| * Outline the daylight calculations using daylight autonomy.

Click or tap here to enter text. |
| **Combined living and bedroom areas of each apartment comply with the daylight requirements.** |
| * Enter the percentage of combined living and bedroom areas that comply with daylight requirements.
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| **Fixed shading devices are used to reduce glare from sunlight through all viewing facades and skylights.** |
| * Outline the nominated plane for viewing facades.

Click or tap here to enter text. |
| * Outline the nominated plane for skylights.

Click or tap here to enter text. |
| * Demonstrate that the nominated plane is shaded from direct sunlight for 80% of the nominated hours for each day of the autumn and spring equinoxes and the summer and winter solstices.

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Click or tap here to enter text. |
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| * Contrast between spaces should not exceed the maximum luminance ratios as defined in AS/NZS 1680.1 for visual task, immediate surrounds, and general surrounds
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## Regular Occupied Area

The area of a building(s) relevant to particular credit. The definition of Regularly occupied areas varies across different Green Star tools, and is uniquely defined within particular credits.

#### Primary Space

All areas where a person is expected to work, or remain for an extended period of time, including, but not limited to:

- Offices, either open plan or private;

- Residential lounge rooms and bedrooms;

- Classrooms, laboratories, computer labs;

- Ward rooms, nurse’s stations, clinic rooms;

- Kitchen and preparation areas where food is being sold;

- Retail / sales floor, exhibition halls, galleries (unless exclusion is justified), multi-purpose rooms (as a general setting); and

- Occupied areas within industrial buildings such as manufacturing spaces, shop floors and work stations. Warehouse and distribution spaces are considered primary space only if the majority of the space is an area where people expected work, or remain for an extend period of time.

The predominant use of the space determines the space type classification. Where the functional requirements of the space demand specific ventilation conditions (e.g. laboratories, auditoriums, cinemas, or archives) the exclusion must be justified by the project team in a Technical Question.

#### Secondary Areas

All areas used to support the principal activity of the primary space. These spaces will be regularly occupied, however a single person is unlikely to remain within for more than two hours. Examples of secondary space include:

- Meeting rooms, boardrooms;

- Residential kitchens and bathrooms;

- Auditoriums, gyms, seminar rooms (if not intended for regular classes);

- Waiting rooms, and any diagnostic area where no specific lighting requirements exist;

- Cafeterias, restaurants, seating areas, office breakout areas, food courts

Where the project team is unsure of whether a space is primary or secondary, it is recommended that the project team either submits a Technical Question for confirmation, or classify the space as a primary space.

Corridors that are exclusively used for transit between spaces (i.e. do not act as a foyer, lounge, waiting space, or reception), and are bound on both sides by a wall these are excluded from the nominated area. Where a corridor is part of a shared space, this corridor, or section of a corridor, cannot be excluded and is considered part of the adjacent space.

#### Tertiary Space

All areas which are either transient spaces, or accessed intermittently. Examples of tertiary spaces include:

- Back of house areas;

- Corridors;

- Hallways;

- Plant rooms;

- Storage facilities, storerooms, storehouses, depots or similar;

- Warehouse and distribution spaces if they are unoccupied.

- Service riser

Project teams can choose to submit a Technical Question to have their identification of spaces types in their project confirmed.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Building Space Name and Identifier  | Area(m2) | Sum Area(m2) |
| Primary Space |  |  |  |
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| Secondary Space |  |  |  |
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| Tertiary Space |  |  |  |
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|  |  |
| --- | --- |
| **Total Gross Gloor Area (GFA)** | Click or tap here to enter text. |

**\*If the project team has already populated the project summary GFA in another Submission Template, please paste it here.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Light Quality**  | **Primary, secondary or tertiary**  | Occupied Area (m2) | Discussion or n/a for non-applicable criteria  |
| Lightning Comfort |  |  |  |
| Glare from Light Sources |  |  |  |
| Daylight |  |  |  |

**\*For any exclusions to the occupied areas, please submit a TQ to** **greenstarnz@nzgbc.org.nz** **for approval.**

## Declaration

Provide the following details as confirmation that the information provided in this document is truthful and accurate at the time of completion.

|  |  |
| --- | --- |
| **Name** | Click or tap here to enter text. |
| **Position** | Click or tap here to enter text. |
| **Email** | Click or tap here to enter text. |
| **Date** | Click or tap to enter a date. |