

Green Star - Education Design PILOT Documentation Guidelines

23 February 2009

The New Zealand Green Building Council (NZGBC) is pleased to introduce the latest in our Green Star suite of rating tools: **Green Star NZ – Education Design PILOT**, which is now in PILOT phase. The PILOT phase of a tool is the period during which we seek feedback from the industry prior to releasing the final tool when you can register to have your building rated by the Green Star system.



The following guidelines will help you understand how to demonstrate compliance with the Credit Criteria at the Design phase for the Education PILOT tool. Only the projects of sponsors are able to be rated under the PILOT tool.

The compliance requirements detailed below are only applicable to the PILOT tool and are subject to change with the release of the final Green Star NZ – Education 2009 tool. Projects are advised to purchase a copy of the Technical Manual when the final tool is released in mid-2009.

When the final tool becomes available the Technical Manual will also contain compliance requirements for a Built submission as well as additional guidance that will support the compliance requirements for each Credit.

We're now seeking feedback on these guidelines, which can be sent in via the feedback form available for download on the NZGBC website – www.nzgbc.org.nz.

Management

MAN-1 Green Star NZ Accredited Professional

1. **Evidence of accreditation:** A copy of the Design phase appointed Green Star NZ Accredited Professional's accreditation certificate.
2. **Letter of appointment:** A copy of the Green Star NZ Accredited Professional's letter of appointment that lists his/her scope of works **OR** **Fee proposal and acceptance of proposal:** A fee proposal from the Green Star NZ Accredited Professional that lists his/her scope of works. The acceptance of the proposal is to confirm acceptance of this fee proposal and the scope of works listed.
3. **Meeting schedule:** A list of project meetings attended by the Green Star NZ Accredited Professional. The relevant items must be highlighted as necessary.

4. **Extract(s) from the contract:** Extracts from the contract where it is stipulated that a Green Star Accredited Professional will be engaged as part of the Contractor's on site construction team from the commencement of building construction.

MAN-2 Commissioning Clauses

1. **Commissioning specification extract(s):** Extract(s) from the design specification describing the project's commissioning requirements. Relevant items must be highlighted and must be in exact accordance with CIBSE Commissioning Codes for all services, or ASHRAE Commissioning Guideline 1-1996 for the mechanical and CIBSE Commissioning Codes for the other services.
2. **Project timeline:** Demonstrating the inclusion of a commissioning period and relevant milestones, as well as their impact on the rest of the project activities.
3. **Confirmation from the building owner:** Confirming the building owner's commitment to incorporate the commissioning requirements into the project in accordance with the specifications.

Where the Additional point is claimed

1. **Short report on design intent:** Outlining the design intent and include the following items:
 - Energy & Environmental Strategy - Description of the building initiatives intended to enhance energy efficiency and conservation, and minimise greenhouse gas emissions, including an overview of the potential savings, as stated for economic and environmental impact.
 - Monitoring and Targeting - Details on energy, water, indoor environment quality, waste targets and benchmarks for the building, such as W/m² and on the metering and sub-metering strategy.
 - Building Services - Description of the basic functions and operation of the following systems: Ventilation, Heating System, Cooling System, Electrical Systems, Lighting and Domestic Hot Water (DHW).
2. **Each referenced system must be accompanied by the following documentation:**
 - A simplified diagram of the system. A description of its intended operation and its conditions.
 - A list of the main components (including controls), and the value and conditions of their efficient use. Details on maintenance, including recommended frequency.
 - A list of likely tell-tale signs of system failure, system 'do's and don'ts', and notes on inefficient operation.
3. **Extract(s) from the specifications:** The specifications must list the contractor's requirements to provide the owner with the following at building handover:
 - As-built/as-installed drawings.

- Commissioning Report.
- Training to ensure that building management staff have all the information and understanding needed to efficiently operate and maintain the features and systems in the building.

MAN-3 Building Tuning

1. **Extract(s) from the specification(s):** Including a requirement for a minimum 12-month building tuning period which includes no less than monthly monitoring, quarterly reviews and reporting in accordance with design intent documentation from the design team with a Building Tuning Report generated for the building owner and listing the roles and responsibilities of the various parties to be involved during this period.
2. **Project timeline:** Demonstrating the inclusion of the building tuning period and milestones within the project timeline.
3. **Confirmation from the building owner:** Committing to the incorporation of building tuning outcomes into the project and a feedback report generated by the building tuning team, reviewed by the relevant design team member and made available to the other project team members.

MAN-4 Independent Commissioning Agent

The Independent Commissioning Agent must meet the following criteria: May not be an employee of any design, contractor or sub-contractor organisation that has been involved in the installation of the commissioned systems.

1. **Letter of appointment:** From the building owner of the independent commissioning agent. The letter shall state that the commissioning agent is an objective advocate of the building owner and must include the responsibilities of the commissioning agent outlined in this credit. **OR Written commitment from the building owner:** To appoint such an agent which lists the responsibilities of the agent. This will be sufficient where an agent has not yet been selected.

MAN-5 Waste Management

1. **Extract(s) from the contract(s):** Extract(s) from the contract conditions between the contractor and either the developer or the building owner stipulating in the body of the contract the full criteria for reuse/recycling of the stated proportion of construction and demolition waste. The exact provisions of the Credit Criteria must be found in the body (rather than Appendices) of the document. **OR Extract(s) from the tender documentation:** Extract(s) from the tender documentation requiring the reuse/recycling of the stated proportion of construction and demolition waste by the contractor and sub-contractors. The exact provisions of the Credit Criteria must be found in the body (rather than Appendices) of the document.

MAN- 6 Users' Guide

Information on the following should be included in the two Users' Guides: Energy and Environmental Strategy, Monitoring and Targeting, Building Services, Transport Facilities, Materials and Waste Policy, Expansion/Re-fit Consideration, General Information and References.

1. **Building Users' Guide:** A complete Building Users' Guide which includes all the information outlined in the Credit Criteria must be provided for assessment.
2. **Extract(s) from the contract:** Extracts from the contract where it is stipulated that the project team will transfer the Building Managers' Guide and Communication Strategy to the building manager upon building handover.

MAN-7 Environmental Management

1. **Short report:** Prepared by a relevant project team member that correlates the provisions of the EMP with the NSW Environmental Management System guidelines 1998 or 2007.
2. **Environmental Management Plan:** Comprehensive, project-specific EMP, clearly demonstrating compliance with the requirements of Section 4 of the NSW Environmental Management System guidelines 1998 or 2007.
OR Contractor ISO14001 certificate: That is current and valid, demonstrating that an appropriate EMS is operating within that organisation.
3. **Confirmation of subcontractor adherence to ISO14001 requirements:** Letter of confirmation from the building owner or contractor stating that any subcontractors relevant to the project will adhere to applicable ISO14001 requirements.

MAN-B Learning Resources

1. **Short report:** Describing how the Credit Criteria have been met by summarising each building initiative (Learning Resource), stating which Green Star NZ – Education Credit it relates to, and describing how this Learning Resource is communicated or displayed to educate all building users and referencing all relevant specifications and drawings.
2. **Extract(s) from the specification(s):** Demonstrating that each Learning Resource and its display mechanism are included in the design.
3. **Design drawing(s):** Demonstrating the location of each Learning Resource and its relevant display mechanism (e.g. display monitor, signage etc).

Additional Guidance

The following is a list of example Learning Resources and their minimum documentation requirements. This is not an exhaustive list and is only intended to assist project teams during the PILOT phase if they are unsure of the types of Learning Resources that could be demonstrated in this manner.

Electrical energy sub-metering

- Specification extracts demonstrating the location of the meters and how they will communicate the impact of usage, weather, or time of day, on the building's electricity use.

Note: For electrical energy sub metering to be used as a Learning Resource for this Conditional Requirement, at least one point for ENE-6 must be awarded.

Alternative energy sources

- Specification extracts demonstrating how the equipment and plant that will utilise alternative energy sources will communicate the benefits of the technology and require the display of live data recording the energy generated and subsequent CO₂ emissions avoided.

Note: For alternative energy sources to be used as a Learning Resource for this Conditional Requirement, the additional two points of ENE-2 must be awarded.

Landscape irrigation

- Specification extracts demonstrating that the amount of rainwater harvested will be displayed and information provided to building users as to how it is used to irrigate adjacent landscapes in addition to the amount of potable water use avoided.

Note: For landscape irrigation to be used as a Learning Resource for this Conditional Requirement, at least one point must be awarded in WAT-3.

Daylighting

- Specification extracts demonstrating how the easily interpreted daylight meters will be displayed in readily accessible locations to illustrate the positive impact of natural lighting and how this method of lighting is affected by space type/use, shading, glazing, and climatic conditions.

Note: For daylight meters to be used as a Learning Resource for this Conditional Requirement, at least one point must be awarded in IEQ-8.

CO₂ monitoring

- Specification extracts demonstrating that easily interpreted CO₂ meters will be displayed in readily accessible locations to illustrate the CO₂ levels present during normal hours of operation and what factors influence these levels e.g. occupation, ventilation.

Note: For CO₂ monitoring to be used as a Learning Resource for this Conditional Requirement, one point must be awarded in ENE-3

Acoustic control

- Specification extracts demonstrating that acoustic absorbent materials will be displayed in readily accessible locations illustrating their purpose, benefits and composition.

Note: For acoustic control to be used as a Learning Resource for this Conditional Requirement, one point must be awarded in IEQ-13

MAN-C Learning Resources Incorporated into the Curriculum

Primary and Secondary School Facilities:

1. **Short report:** Describing how the Credit Criteria have been met, including the provision of a curriculum overview that clearly explains how the relevant Learning Resources demonstrated in MAN-B Learning Resources have been incorporated into the curriculum and references the relevant project specifications and drawings.
2. **Relevant excerpts from the curriculum:** Demonstrating how the Learning Resources are incorporated.
3. **Written confirmation:** From the relevant Board of Trustees and the MoE that the components of the curriculum that include the Learning Resources are appropriate for the education facility and will meet the Credit Criteria.

Tertiary Education Facilities:

1. **Short report:** Describing how the Credit Criteria have been met, including the provision of a curriculum overview that clearly explains how the relevant Learning Resources demonstrated in MAN-B Learning Resources have been incorporated into the curriculum and references the relevant project specifications and drawings.
2. **Copy of the relevant course description or extract from the curriculum:** That clearly shows how the Learning Resources have been incorporated into the curriculum of at least one course.
3. **Written confirmation:** From the Committee on University Academic Programmes (CUAP) that the inclusion of the Learning Resources within the course(s) is appropriate for the education facility and meet the Credit Criteria.

MAN-D Maintainability

1. **Letter of appointment from the building owner:** confirming that a suitably qualified and experienced staff member responsible for maintenance, or qualified independent facilities manager, has been appointed to perform a design review at the relevant stages and in line with the Credit Criteria.
2. **Proof of experience (staff member only):** A copy of the appointed maintenance staff member's CV demonstrating previous experience in the maintenance of building services, external building features and cleaning in a similar building type. **OR A letter from the education facility:** demonstrating the appointed maintenance staff member's previous experience in maintenance of building services, external building features and cleaning in a similar building type.
3. **Preliminary design review report:** Prepared by the appointed maintenance staff member or qualified independent facilities manager at the preliminary design stage. This report must include recommendations to the design team in respect to the access, ongoing maintenance and ongoing cleaning of the areas listed in the Credit Criteria. The report must also assess the selection of the building materials and components and ensure that they are fit for purpose i.e. will withstand typical education use without needing premature replacement or advise accordingly.

4. **Final design review report:** Prepared by the appointed maintenance staff member of qualified independent facilities manager at the final design stage. This report must reference the preliminary design review report and confirm that the recommendations made at preliminary design stage have been included within the final design or else excluded for justified reasons.

Indoor Air Quality

IEQ-1 Base Ventilation Rates

1. **Signed letter:** From a design professional on the team showing that the building is either, going through the Building Consent process, or the Building Consent is less than 2 years old.
2. One of the following is to be provided: **A consent number, or a producer statement, or a peer reviewed document.**

IEQ-2 Ventilation Rates

Mechanically air-conditioned spaces: Projects are required to use the design occupancy, not default occupancy from relevant standards, for all credits that address mechanical ventilation systems.

Mixed-mode ventilated Spaces: The Assessors will not deem a space or building mixed-mode ventilated unless it independently satisfies the Credit Criteria for both naturally ventilated and air-conditioned spaces, regardless of the proportion of time the space operates in either mode.

For mechanically ventilated buildings

1. **Short report:** With a table showing that for each area served by an AHU, the requirements of the Credit for the points claimed are met. Note that improvements must be measured against the NZBC requirements.
2. **Extract from the mechanical specification:** Where the minimum outside-air rate for the system is stipulated.
3. **Mechanical design drawings:** For the building showing the minimum outside supply air to each area and indicating the UFA served by each AHU.

For naturally ventilated buildings

1. **Design drawings:** For each naturally ventilated space showing openings and ventilation inlets and outlets.
2. **Schedule of ventilation openings:** Listing the opening sizes and floor area for each naturally ventilated area demonstrating that the deemed-to-comply requirements of NZBC requirements are met. **OR Empirical calculations:** To be submitted to the relevant territorial authority to demonstrate compliance with the NZBC. **OR Computer modelling report:** To be submitted to the relevant territorial authority which demonstrates that the design meets the intent of the AS 1668.2-2002.

IEQ-3 Indoor Air Quality

Ceiling Systems – Applicable to: Ceiling tile, Ceiling grid.

Please refer to the Additional Guidance sections of IEQ-13 VOCs and IEQ-14 Formaldehyde Minimisation within Green Star - Office Design V1 in addition to the NZGBC Technical Clarifications listed on the NZGBC website (<http://www.nzgbc.org.nz/>) for further guidance prior to the release of the Education Technical Manual with the final tool.

The product(s) must comply with the following Table IEQ 3.3

Table IEQ 3.3: VOC/formaldehyde limits for ceiling tiles	
Individual VOCs ¹	≤0.1 TLV
Formaldehyde	≤0.05 ppm (≤ 0.06 mg/m3)
Total VOCs ²	≤0.5 mg/m3
Total Aldehydes ³	≤0.1 ppm
Respirable Particles (≤10 µm)	≤0.05 mg/m3
¹ Any VOC not listed must produce an air concentration level no greater than 1/10 the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438). ² Defined to be the total response of measured VOCs falling within the C6 – C16 range, with responses calibrated to a toluene surrogate. ³ Defined to be the total response of a specific target list of aldehydes (2-butenal; acetaldehyde; benzaldehyde; 2,5-dimethylbenzaldehyde; 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard. GREENGUARD Certification affirms that a product's emissions fall within the limits selected by GREENGUARD from reputable third-party risk based criteria, as identified above. GREENGUARD program testing is conducted consistent with a defined protocol and does not measure emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical emissions. © 2005 GG Publications, Inc. GGPS.EC.004.R0 January 2001	

The adhesive used in ceiling tiles must be no more than 0.5% by weight of adhesive (Furniture and fittings ECNZ)

1. **Summary report:** Describing how Credit Criteria have been met by listing and referencing all the products within the relevant category used in the project, date of installation (if already in place), area (m²) covered by each type, and nominating those that meet the Credit Criteria.
2. **Product datasheets/test reports:** Product datasheet and/or test report with the compliant VOC/formaldehyde levels highlighted and referenced in the short report; and stating the calculation method followed to determine VOC/Formaldehyde levels of each specified product. The datasheets must come from the manufacturer documenting the calculation method followed. If VOC/formaldehyde levels are determined by laboratory testing, the supporting information must include the test report from a laboratory competent to complete the relevant test method. Laboratories may demonstrate their competency by being accredited or registered to ISO/IEC 17025 from International Accreditation New Zealand (IANZ) or other recognised accreditation agency (e.g. NATA in Australia). **OR**

Relevant certification: Issued by a third party acceptable to the NZGBC (List of approved Eco- labels are available on the NZGBC website).

3. **Extract(s) from the specification(s):**

- Nominating the VOC limits for each product within the relevant category type.
- The formaldehyde content or emissions standard for all engineered wood products used in the project (except excluded applications).
- Stating that the contractor is required to obtain approval of the design team or client before substituting the finishes/products listed in the schedule.
- Requiring that at the end of construction works, the contractor undertakes a final audit to ensure that the correct products have been used.
- Where the project has no products from a particular category, showing where it is stipulated that no carpet; paint; adhesive/sealant; engineered wood products or ceiling tiles is/are to be used in the project.

IEQ-4 Air Change Effectiveness

Not applicable to this tool

IEQ-5 Tenant Exhaust Riser

It is a requirement of this Credit that the exhaust facility is a dedicated exhaust facility and that air exhausted cannot be recycled to other enclosures.

1. **Short report** that describes how the Credit Criteria have been met by:
 - Describing how the exhaust riser is controlled and operated.
 - Describing how the system is connected to the base building energy meter.
 - Describing how the system meets the requirements of the credit and referring to design drawings and specifications.
 - Including clear calculations correlating per-floor air rates to the UFA, specifications and the drawings.
3. **Extract(s) from the specification(s):** Outlining the design criteria for the exhaust riser demonstrating compliance with the Credit Criteria.
4. **Design exhaust riser drawings:** Showing the location of the exhaust risers. These drawings can be in the form of architectural floor plans or reflected ceiling plans, and must contain relevant information required for this Credit.

IEQ-6 Thermal Comfort

Thermal comfort calculations must use default values for clothing, metabolic rate and air velocity. Please refer to the Additional Guidance section of IEQ-10 Thermal Comfort within Green Star - Office Design V1 for further guidance prior to the release of the Education Technical Manual with the final tool.

1. **Thermal Comfort Design Report:** Demonstrating how the design complies with the Credit Criteria. The report will need to contain:
 - A summary of the thermal modelling simulation output including the hourly PMV levels for each day of the year that the space is occupied, summary of radiant temperatures, air temperatures and humidity from the simulation, and details of the weather data used.
 - A description of the HVAC system and drawings showing how the building layout has been zoned for the thermal comfort analysis.
 - A description of the methodology and software package used for determining the thermal comfort levels.
 - The clothing, metabolic rate and air movement values used 'Additional Guidance'. (See Green Star - Office V1) IEQ 10.
 - A summary of the hourly thermal comfort results, radiant temperatures, air temperatures and humidity for each zone.
 - A description of the year's worth of weather data used. The report will also need to demonstrate that it is valid for the design by referencing all other required documents.
2. **Design drawings:** Plan drawings clearly showing each zone assessed for thermal comfort and Façade and roof drawings, as well as any other relevant elevations to show the façade materials in the design. Mechanical drawings showing the perimeter zones used for the PMV modelling match the mechanical control zoning and are no greater than 4m in depth.
3. **Extracts from the specification:** Where the thermal properties of materials are nominated.
4. **Confirmation from the energy modelling consultants:** That the software matches the ISO 7730/ASHRAE 55 requirements set out in the Credit.

IEQ-7 Thermal Comfort Control

The documentation should demonstrate that the base building HVAC system is capable of providing small or individual zone user control and direct user access to controls.

1. **Short report:** About the system listing each zone size and describing:
 - The system operation.
 - The controls strategy.
 - How control is provided to each zone.
 - The area served by the system.
2. **Design drawings:** Clearly showing the location of user controls and the UFA served by each control.

For mechanically ventilated buildings

1. **Extract from the specification:** Showing individual supply controls. **OR** a provision in the base building HVAC system for installation of user supply controls.

For naturally ventilated buildings

1. **Elevation drawings:** Showing that the location and size of operable windows meet AS1668.2.

IEQ-8 Daylight

Reflectance values of a working office environment shall be taken as 75% for ceilings, 50% for walls and 20% for floors. Actual reflectance values may be used in the model where they can be demonstrated to be higher.

Please refer to the Additional Guidance section of IEQ-5 Daylight within Green Star - Office Design V1 for further guidance prior to the release of the Education Technical Manual with the final tool.

1. **Daylight Modelling Report:** Describing the software or calculation methodology and variables used for the daylight modelling and providing daylight results for each area claimed to have a Daylight Factor of 2.5% or greater. The Daylight Modelling Report must provide all information detailed in the 'Additional Guidance' of Green Star – Office Design V1 IEQ-5 Daylight.
2. **Extract(s) from the specification:** Where all glazing properties and minimum visual transmittance levels are nominated.
3. **Site plan:** In the context of the surrounding area showing heights and location of surrounding buildings and average reflectance for those buildings.

IEQ-9 Daylight Glare Control

Fixed Shading

The Assessors will not award the point unless the typical glare control devices on the façade have been analysed and found to shade the stipulated proportion of the UFA for at least 80% of direct sun throughout the year, and is supported by the documented design.

The hours between 8am and 6pm are to be used for calculation 80% of the standard occupancy hours.

Typical floor plan diagrams must be submitted for 9am, midday and 3pm during winter and summer solstice as well as one equinox. Diagrams may be derived from stereographic computer modelling methods or manual methods to comply with the credit.

Please refer to the Additional Guidance section of IEQ-6 Daylight Glare Control within Green Star - Office Design V1 for further guidance prior to the release of the Education Technical Manual with the final tool.

1. **Short report:** That describes how the Credit Criteria have been met by:

- Identifying all spaces where glare is minimised and nominating their areas.
 - Nominating the solutions used to minimise glare in each space.
 - Where internal blinds/screens are used, describing how direct sun penetration will be avoided.
2. **Design façade drawings:** of the building and any atriums marked up to show:
 - Each typical glazing system (refer to the Additional Guidance section of Green Star - Office V1 IEQ-6 Daylight Glare Control) in the design and its orientation.
 - The glare control solutions used for each typical glazing system or atrium.
 - The extent of fixed shading for that glazing system or atrium.
 3. **Wherever applicable, construction detail drawings** of the glare control devices.

For fixed shading

1. **Floor plan diagrams:** At the working plane (700mm AFFL), indicating points 1.5m in from the centre of each typical glazing system and aspect, demonstrating that the points are shaded for at least 80% of standard hours of occupancy. Typical floor plan diagrams must be submitted for 9am, midday and 3pm during winter and summer solstice as well as on equinox and map out areas of direct unimpeded solar radiation. **OR Stereographic diagrams:** At the working plane (700mm AFFL), 1.5m in from centre of each typical glazing system demonstrating that the point is shaded for >80% of standard working hours.

Where Credit Criteria is met through blinds/screens

1. **Extracts from the specifications:** That stipulate how the Credit Criteria will be achieved, Indicating the daylight glare control system within the design and for any internal blinds/screens, stipulating a VLT of less than 50 and how the occupant manual control will perform.

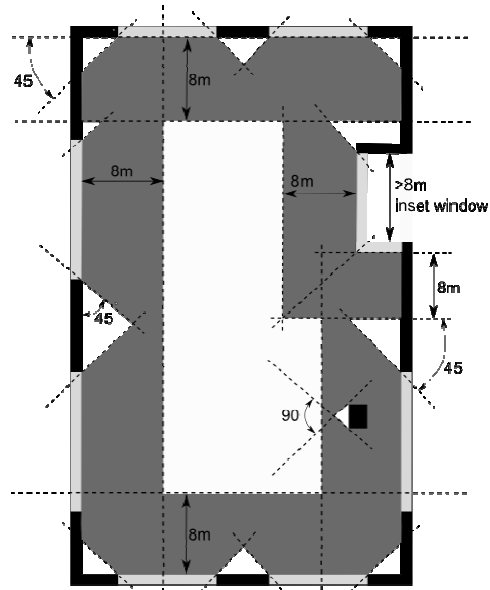
IEQ-10 External Views

External views

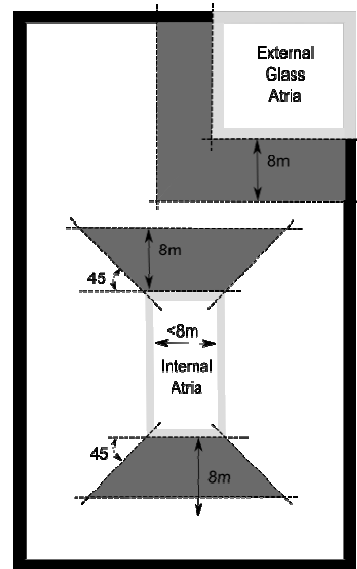
Where compliance is achieved through external views, the following must be achieved:

- The view must extend from the perimeter of the building unblocked by solid structures (i.e. there must not be another building within eight metres).
- The area behind any solid portion of the external wall or atrium must be excluded from the calculations.
- The sight line is to be measured by extending a perpendicular line from the atrium or window; a line at 45 degrees can be used at the corners of atria or windows, as per Figure 1. Sight lines must take into account thickness of external walls (there must be a clear line of sight to the outside).

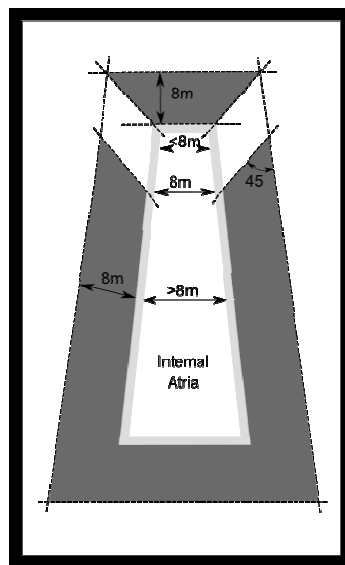
External view criteria for:



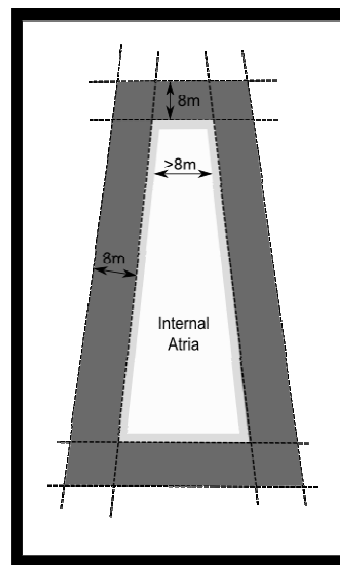
A). External windows



B). Long thin atrium



C). Atria



D). Atria

Key:

Allowable external views area



Walls/pillars



Windows



Figure 1 Diagrams illustrating areas that comply with the Credit Criteria given various atria shapes.

Day-lit Atrium

Where compliance is achieved through a day-lit atrium, the following must be achieved:

- The atrium must be at least 8 metres wide at any point to which the line of sight is demonstrated.
- If the office space opens directly onto the atrium, calculation must be made from the vision glazing or from the internal perimeter of the atrium if no internal glazing is installed.
- The area behind any solid portion of the atrium perimeter must be excluded from the calculations.
- The minimum daylight factor of 3.5% is for 90% of the atrium area on each level for which compliance is claimed.
- The base of the internal atrium is considered to be at the lowest level of office space (even if the actual base of atrium is several floors lower).
- The sight-line is to be measured at by extending a perpendicular line from the atrium/window. A line at 45 degree can be used at the corners of atrium/windows. Site lines must take into account thickness of external walls (there must be a clear line of sight to the outside).

Refer to Green Star - Office V1 Technical Clarification for IEQ-9 External Views for additional guidance.

1. **Short report:** That describes how the Credit Criteria have been met by:
 - Referencing drawings.
 - Providing calculations of the total UFA within eight metres of vision glazing or daylight atrium.
 - The area behind any solid portion of the perimeter of the external wall or atrium must be excluded from the calculations.
 - Providing a summary table demonstrating that compliant UFA jointly accounts for the stipulated percentage of the UFA.
2. **Design drawings:** Floor plans of all typical floors marked up to show any atria and their dimensions, the location of vision glazing and all UFA within eight metres of vision glazing or daylight atrium, excluding the area behind any solid portion of the perimeter of the external wall or atrium and indicating sight lines where relevant. Sight lines must take into account thickness of external walls (there must be a clear line of sight to the outside) and must extend eight metres from the perimeter of the building (i.e. there must not be another building within eight metres). Elevation drawings showing location and shape of vision glazing must also be provided.

Where compliance is achieved through use of atria

1. **Daylight modelling report:** Demonstrating, with inputs justified by the documented design, the Daylight Factor in the atria.

IEQ-11 Electric Lighting Levels

1. **Short report:** That describes how the Credit Criteria have been met and references attached documents as appropriate by:
 - Illuminance calculations for each area of the buildings.
 - Illuminance ratio calculations for each adjacent space where movement is possible between these spaces.
 - Illuminance ratio calculations for each task area.
2. **Extract(s) from the specification(s):** Where the average maintained luminance lighting levels are stipulated. Where the second point is claimed the reflectance values and illuminance values should also be stipulated.
3. **Design reflected ceiling plan (RCP) drawings:** For each typical ceiling layout, marked up to demonstrate compliance with the Credit Criteria, with the location, type and expected average maintained luminance of all luminaires clearly indicated.
4. **Isolux drawings:** Complete with stated uniformities, surface reflectances, maintenance factors and task heights.

IEQ-12 High Frequency Ballasts/Equipment Control Gear

1. **Short report:** That describes how the Credit Criteria have been met by:
 - Identifying all luminaires used in the building with the kHz of the ballasts and quantities nominated.
 - The UFA served by luminaires with compliant electronic ballasts.
 - A summary table or calculations showing that the areas served by luminaires with compliant electronic ballasts jointly account for at least 95% of the total UFA.
2. **Extract(s) from the specification(s):** Stipulating the use and kHz of electronic ballasts for 95% of the fluorescent and HID luminaires listed over the entire UFA.

IEQ-13 Internal Noise Levels

Significant annoyance can arise from mechanical systems with excessive low frequency noise due to turbulence (rumble), even when the A-weighted sound pressure level is below the recommended value. The acoustic consultant is to provide comment on this if applicable to the building.

In order to achieve both points, an allowance needs to be made for the contribution from all noise sources e.g. it may be appropriate to design building services to 40dB(A)LAeq and building envelope to 40dB(A)LAeq.

Typical Noise Sources may include the following:

- Mechanical Equipment;
- Pipes
- Hydraulic Services
- Plant Room Breakout
- Traffic Noise

- Other external Noise sources
1. **Short report:** Prepared by a qualified acoustic consultant that describes in summary how the Credit Criteria have been met by describing:
 - All relevant internal and external noise sources.
 - The design features required to demonstrate that the Credit Criteria has been achieved and Comments on the measures taken to address low frequency HVAC noise.
 2. **Design drawings:** Plan drawings of all typical floor plates showing the noise control features included within the design, typical section drawings of the building showing the noise control features included within the design and typical detail drawings demonstrating noise control design features included within the design.

IEQ-I Drinking Water

The water dispenser can be any type dispensing free, fresh water (not coin dispensers). They can be mains fed or the type that require bottles to be installed, but where the latter is used, a maintenance schedule should be submitted, indicating who is responsible for changing the bottles and expected frequency of change.

1. **Short report:** Describing how the Credit Criteria have been met by indicating total numbers of students and compliant number of water dispensers based on the Credit Criteria.
2. **Extract(s) from the specification(s):** Demonstrating that each dispenser meets the requirements of this Credit.
3. **Design drawing(s):** Of the building/campus showing locations of water dispensers, demonstrating that they are evenly dispersed throughout the building/campus and are easily accessible throughout the day.

IEQ-J Learning Space Furniture

Where students move rooms throughout the day, it must be clear to the assessors that appropriate sized furniture is available on an individual basis in all spaces. It is suggested that in buildings where spaces are used by a wide 'stature' range, adjustable furniture is used to demonstrate compliance for this credit.

1. **Schedule of** students identifying their '**stature range**': On a per room/space or per project basis with compliant furniture choice highlighted for each stature range as given in BS EN 1729-1:2006 Furniture: Chairs and tables for educational institutions (functional dimensions).
2. **Extract(s) from the specification** showing that appropriate furniture that is flexible/adjustable and able to meet the stature range above on a per room/space or per project basis has been specified.

Energy

ENE-1 Energy

1. **Energy modelling report(s):** Clearly describing the modelling process for the building in accordance with the requirements listed in the Green Star - Education Energy Calculator Guide. This must include both the reference and actual building models with a calculation demonstrating the percentage reduction in energy achieved in the actual building.
2. **Summary of inputs and outputs from the energy model software:** Sufficient to demonstrate compliance with the Credit Criteria and the Green Star - Education Energy Calculator Guide.
3. **Extract(s) from the specification(s) and design brief:** To demonstrate that all modelling data used in the energy simulation reflects the current design (refer to Credit Criteria and the Green Star - Education Energy Calculator Guide).
4. **Design drawings:** Demonstrating that the façade details and materials are the same as described in the energy modelling report.

ENE-2 CO₂ Emissions

1. **Short report:** Briefly describing the system and referencing documentation provided for this credit as well as reports and calculations submitted for ENE-1.
2. **Detailed calculations and estimates of the annual energy contributions:** From renewably-based on-site generation sources (e.g. photovoltaics, wind-energy, micro-hydro, etc) that offset the CO₂ emissions from non-renewables.
3. **Signed and dated printout of the CO₂ calculator:** From the Green Star NZ - Education tool worksheet.

ENE-3 Carbon Dioxide Monitoring and Control

Control refers to the ability to influence set points in the HVAC system in response to changes in CO₂ levels in a space. This can be achieved by either:

- The CO₂ sensors directly adjusting set points via a BMS system OR
 - The facilities manager manually adjusting set points in response to logged CO₂ levels.
1. **Short report:** Describing the mechanical ventilation system in place and details of how the Credit Criteria are achieved.
 2. **Extracts from the specification:** Clearly describing the operation of the mechanical system.
 3. **Design drawings or schematics of the mechanical system:** Showing the location of sensors.

Where the credit is claimed as Not Applicable

Where the building is naturally ventilated:

1. **Schedule of ventilation openings:** That identifies all spaces within the building, provides their sizes, identifies which are naturally ventilated, lists the sizes of the ventilation openings and confirms that the deemed-to-comply requirements of AS1668.2-2002 are met for at least 95% of the UFA. **OR Empirical calculations:** Required for demonstrating compliance with AS1668.2-2002 to the relevant territorial authority. **OR Computer modelling report:** To be submitted to the territorial authority, which demonstrates that the design meets the intent of AS1668.2-2002.

Where the building has 100% fresh outdoor air:

1. **Short report:** Describing the ventilation system in place and details how 100% fresh outdoor air supply is achieved.
2. **Design/as-built drawings or schematics of the installed system:** Confirming the described system (Design drawings will only be accepted during the Design rating).

ENE-4 Lighting

1. **Short report:** Describing how the Credit Criteria have been met by:
 - Providing a summary table that lists all layouts and their areas, demonstrating that compliant areas jointly account for at least 95% of the UFA.
 - Stating the working plane used in the calculations.
 - Outlining the lighting power density calculations for each of the typical layouts. Confirmation of reflectance values for ceilings, walls and floors.
2. **Typical computer modelling sheets/Isolux or equivalent calculations:** Confirming average illuminance levels on walls, ceilings and floors.
3. **Extract(s) from the specification(s):** Where the lighting requirements are stipulated including reflectance values, and illuminance levels.
4. **Design reflected ceiling plan drawings:** Indicating the location and area of each typical lighting layout, the luminaires used and the types of lamps used for each fitting.

ENE-5 Lighting Control

In order to be deemed 'easily accessible', switching (for each zone of 100m² or any part thereof) must be located as follows:

- Within no more than 8m from the 100m² zone AND at every entry (two or three-way switches may need to be provided) to the floor or tenancy (if known), whichever area is smaller. **OR**
- At the entry point to the tenancy or floor (whichever area is smaller) if the area controlled by the switching does not exceed 500m².

1. **Short report:** That describes how the Credit Criteria have been met for all points claimed and providing a summary table that lists all separately switched zones and their area, demonstrating that compliant areas jointly account for the stipulated proportion of the UFA.
2. **Design lighting layout drawings:** Clearly indicating the location of each switch and the associated zones. Where the second and third points are claimed, the relevant features should also be included.
3. **Extract(s) from the specification(s):** Describing the intended lighting system including switching.
4. **Design single-line diagram:** Showing the intended lighting control system schematic.

ENE-6 Electrical Sub-metering

If there is a Building Management System (BMS) which can provide a breakdown of the energy use by building system and location as required by the Credit, this must also comply with the Credit Criteria. However, relevant details of the BMS and data must be provided to confirm the metering capability of the system.

Note that supplementary equipment can also be installed on the same measured circuit as the substantive energy use item. However, it must not contribute more than 10kVA.

1. **Short report:** Describing how the Credit Criteria have been met by:
 - Providing a summary table of all major energy uses in the building.
 - Providing a summary table of all separately metered spaces in the building.
 - Describing how the energy consumption data will be effectively monitored during the building's operation and the effective mechanism for monitoring energy consumption data.
 - Where the additional point is claimed, describing how sub-meters are provided separately to monitor HVAC, Power and Lights for each building block.
2. **Extract(s) from the specification(s):** Describing the installation requirements for electrical sub-meters that meets the Credit Criteria. Please refer to the Additional Guidance section of ENE-3 Electrical Sub Metering within Green Star - Office Design V1 for further guidance prior to the release of the Education Technical Manual with the final tool.
3. **Schematic electrical drawings:** With all uses and loads clearly indicated and with the location of all sub-meters clearly marked.

ENE-7 Peak Energy Demand Reduction

Peak energy demand is the predicted annual peak to be calculated as the sum of all distribution bars (to include all miscellaneous loads) relevant to the base building in electrical schematics. Peak energy demand must be calculated as follows:

- In accordance with ASNZS3000:2007.

- As the absolute design capacity of the system, after the application of diversity factors but prior to the application of contingency factors as required for utility agreements (the value is likely to be about 25% less than that for the utility agreement).
 - Mixed-mode ventilated buildings must be calculated as per the mechanically air-conditioned mode.
1. **Short report:** Prepared by an electrical engineer that describes how the Credit Criteria have been met by:
 - Demonstrating, with supporting calculations, the building's peak demand value.
 - Describing in detail, with supporting calculations, the design, operation, and sufficient capacity of the intended system.
 - Appropriately referencing drawings and ASNZS3000.
 - Clearly identifying what active mechanisms will ensure that the demand on the infrastructure will at no point exceed the stipulated percentage of the building's demand.
 2. **Extract(s) from the specification(s):** Where the proposed solution(s) are described.
 3. **Design schematic electrical drawings:** Clearly indicating the type, location and details of the proposed solution(s).

Where the credit is claimed as Not Applicable

1. **Schedule of ventilation openings:** That identifies all spaces within the building, provides their sizes, identifies which are naturally ventilated, lists the sizes of the ventilation openings and confirms that the deemed-to-comply requirements of AS1668.2-2002 are met for at least 95% of the UFA. **OR Empirical calculations:** Required for demonstrating compliance with AS1668.2-2002 to the relevant territorial authority. **OR Computer modelling report:** To be submitted to the relevant territorial authority which demonstrates that the design meets the intent of AS1668.2-2002.

ENE-I Stairs

1. **Short report:** Prepared by the architect or designer, supported by the design drawings and describing how the Credit Criteria has been met by identifying the relevant stairwell(s) within the building and summarising the access, visibility and location.
2. **Design drawings:** Marked up to demonstrate that the stairs are:
 - Available for use by all staff and students, and where applicable general building users.
 - Highly visible (i.e. not visually blocked or behind solid doors).
 - Located in a central location (e.g. within 20m of a main entrance).
 - Architecturally designed to a high quality specification and are able to be used by ambulant disabled people under NZBC (i.e. not enclosed fire stair with basic finishes and steep pitch) **AND**

- Marked up to demonstrate that the lifts are located in a less prominent location (e.g. further than 20m from main entrance and obscured from view) or if located near an entrance, are available only for disabled users or as goods lifts. **AND**
 - 1:20 detail drawings of the staircase(s) showing the handrail, balustrade, tread, riser and structural finishes and architectural quality of the stair(s).
3. **Extract(s) from the specification(s):** Indicating structure and finishes of stair(s) (can be on the 1:20 drawings)

Where the credit is claimed as Not Applicable

1. **Relevant design drawings:** Showing the building is single storey and/or with no passenger or goods-passenger lift (dedicated disabled persons lifts are excluded).

ENE-J HVAC Zoning and Control

Where the building is naturally ventilated

1. **Short report:** Prepared by a mechanical engineer that describes how the Credit Criteria have been met. This must reference either the schedule of openings, the empirical calculations OR the computer modelling report AND Demonstrating that the building is designed as a naturally ventilated space in accordance with AS1668.2-2002 for the nominated area.
2. **Schedule of ventilation openings:** Identifying all spaces within the building:
 - Providing their sizes in the nominated area (UFA).
 - Identifying which are naturally ventilated.
 - Listing the sizes of the ventilation openings and confirming that the deemed-to-comply requirements of AS1668.2-2002 are met for the nominated area. **OR Empirical calculation(s):** Required for demonstrating compliance with AS1668.2-2002 to the relevant territorial authority. **OR Computer modelling report** to be submitted to the relevant territorial authority which demonstrates that the design meets the intent of AS1668.2-2002.
3. **Design drawings:** For each typical naturally ventilated space, with ventilation openings, inlets and outlets clearly indicated with dimensions shown. Floor plan marked up to show compliant spaces.
4. **Design electrical schematic drawings:** Clearly indicating the type, location and details of the proposed solution(s).

Where the building is mechanically ventilated

1. **Short report** prepared by a mechanical engineer that describes how the Credit Criteria have been met by:
 - Providing calculations showing the UFA achieving the Credit Criteria.
 - Providing a schedule of all spaces within the building, indicating their ventilation mode(s) and areas as referenced in the Design Drawings.
 - Detailing the air-conditioning system and it's setback mechanism.

2. **Design drawings** for each typical naturally ventilated space, with ventilation openings, inlets and outlets clearly indicated with dimensions shown. Floor plan marked up to show compliant spaces.
3. **Design electrical schematic drawings** clearly indicating the type, location and details of the proposed solution(s).
4. **Where a BMS is incorporated:** BMS schedule demonstrating that the air-conditioning system is controlled to automatically shut down after set periods of a space not being in use and how the sensors are connected and included in the control system.

ENE-K Passive Systems

1. **Short report:** Illustrating the passive means of cooling, heating and ventilating the building using diagrams where ever possible. Relevant references or excerpts from the Energy Model Report carried out for Ene-1 and 2 to demonstrate that the building requires only minor use of mechanical (active) systems as a component of the passive system. Thermal modelling evidence provided for IEQ-6 Thermal Comfort, demonstrating compliance.
2. **Design drawings:** Showing the construction materials and a site plan demonstrating orientation.
3. **Extract(s) from the specification(s):** For any mechanical systems used.

Where the credit is claimed as Not Applicable

1. **Site survey:** Demonstrating that building is existing. **OR Aerial photograph:** Clearly showing building is existing.

Transport

TRA-1 Car Park Minimisation

1. **Short report:** Describing how the Credit Criteria have been met including a comparison between the total number of car parking spaces provided by the project against the minimum number of car parking spaces required (or against the maximum if a maximum is given by the relevant territorial authority).
2. **Extract(s) from the relevant designation documents or city/district plan demonstrating:**
 - The car parking requirements/allowances for the site.
 - Whether the requirements/allowances are mandatory or otherwise.
 - The name of the issuing authority and the date the site designation or city/district plan was released.
3. **Design drawings:** Showing the number of car parking spaces available for the site.

TRA-2 Fuel Efficient Transport

This Credit is applicable regardless of location or existence of local planning allowances, as neither of those factors lessen the environmental impact of automotive commuting.

Where car parks have less than 10 spaces in total, all car parks must be for fuel efficient cars, carpool participants, and/or mopeds/motorbikes.

For the purpose of this Credit, car parking spaces dedicated for use by disabled users can be excluded from the total number of car parking spaces.

1. **Short report:** That describes how the Credit Criteria have been met by indicating the number of car pool, motorbike, fuel efficient car parking spaces, and total number of parking spaces being provided, or re-designated and makes reference to the relevant design drawings.
2. **Design drawings:** Indicating the total number of car pool, motorbike, fuel efficient car parking spaces and total number of parking spaces being provided, clearly marking and dimensioning parking spaces.
3. **Extract(s) from the contract documentation:** Demonstrating that the parking spaces are designed and will be labelled for fuel efficient cars, carpool participants, and/or mopeds/motorbikes.
4. **Fuel efficiency monitoring program:** Demonstrating that car parking spaces for fuel efficient cars will be monitored in accordance with Right Car NZ 5 Star Classification System.
5. **Car pooling program registration:** Confirmed by the provision of evidence such as a memorandum of understanding from the car pooling program facilitator demonstrating that the car pooling project involves the registration of participants.

Where the credit is claimed as Not Applicable

1. **Drawings:** Confirming that no parking spaces are to be provided. **OR Extract(s) from the relevant designation documents or city/district plan:** Indicating that no additional car parking is permitted for the project.
2. **Written confirmation from the building owner:** Stating that the project has no new car parking spaces associated with it.

TRA-3 Cyclist Facilities

Bicycle Storage

The bicycle storage area(s) must be within the school grounds and be clearly visible from a staff or class room or have other security surveillance.

Showers and Changing Facilities

The total required number of showers and lockers does not have to be provided in one area, but must be located as per the Credit Criteria. Lockers must be located adjacent to the change area.

Secure lockers must be adequately sized to accommodate the hanging of clothing. The locker size should not be significantly smaller than 80cm tall by 25cm wide (for box lockers) or 180cm tall by 30cm wide (for 'L-shaped' double lockers).

Toilets do not count as changing facilities unless there is sufficient private space and lockers adjacent. Even if toilets are fitted out as changing rooms, the minimum number of disabled toilets mandated by statutory requirements cannot contribute to the total number of changing facilities provided, as doing so may detract from their availability for use by disabled persons. Disabled showers can contribute towards the total number of showers provided when they are not a statutory requirement for the project.

To be deemed adjacent, changing facilities in new buildings must be immediately adjacent to the showers. For refurbishments, changing facilities must be located on the same floor with direct access that avoids crossing of public spaces such as lift lobbies, reception areas or primary circulation space.

Primary and secondary schools

1. **Short report:** That describes how the Credit Criteria have been met by:
 - Describing the location and provision of the cyclist facilities and referencing the cyclist facilities drawings.
 - Calculating the required ratio of bicycle storage spaces to pupils, ensuring that the calculation states the maximum numbers of children over year four in the school. Demonstrating that the bike storage has been designed to allow both a wheel and the frame to be locked securely to the structure in accordance with AS2890.3 and be within school grounds and clearly visible from a staff or class room or have other security surveillance.
 - Where the point(s) for staff bicycle storage, changing facilities and showers is/are claimed, the short report must also demonstrate the number, location and access provided to shower, changing and locker facilities.

Tertiary education institutions

1. **Short report:** That describes how the Credit Criteria have been met by:
 - Describing the location and provision of the cyclist facilities and referencing the cyclist facilities drawings.
 - Calculating the required ratio of bike storage to students/staff, ensuring that the calculation states the maximum numbers of students/staff to be accommodated in the new or refurbished building(s). Demonstrating that the bicycle storage has been designed to allow both a wheel and the frame to be locked securely to the structure in accordance with AS2890.3. Showing that the storage is in close proximity to the building's main entrance. Demonstrating the number, location and access provided to shower, changing and locker facilities.

Schools AND tertiary institutions

1. **Design drawing(s)**: of the cyclist facilities showing:
 - The number and location of bicycle racks/rails/storage facilities demonstrating sufficient space to store all bikes and manoeuvre bikes in and out without having to move other bikes or rely on a bike's integral stand.
 - The number and location of shower, changing and locker facilities
2. **Extract(s) from the specification(s)** stipulating the number of showers, lockers and storage spaces provided and that bicycle storage spaces are compliant with AS 2890.3 and the Credit Criteria.
3. **Design drawing(s)**: of the cyclist facilities showing:
 - The number and location of bicycle racks/rails/storage facilities demonstrating sufficient space to store all bikes and manoeuvre bikes in and out without having to move other bikes or rely on a bike's integral stand.
 - The number and location of shower, changing and locker facilities.
 - Bicycle rack /rail/storage device, designed in accordance with AS2890.3 to allow both a wheel and the frame to be locked securely to the structure.

TRA-4 Commuting Mass Transport

Deemed to satisfy criteria:

Projects located within these postal regions will automatically receive four points for this credit:

Postal Region	Postal Code
Auckland CBD	1010
Hamilton CBD	3204
Wellington CBD	6011
Christchurch CBD	8011
Dunedin CBD	9016

Table Tra-4.2: Postal codes with a 'deemed to satisfy' provision

Additional qualifying postal codes will be provided on the NZGBC website upon availability.

1. **A copy of the Completed Green Star Mass Transport Calculator.**
2. **Short report:** That describes how the Credit Criteria have been met by summarising the compliant routes that correspond to each mass transport stop showing the route number of the bus service(s) for each stop and/or tram or train line servicing the nearest station. The timetables used for the calculations must be included as an appendix.

3. **Design drawings extending to surrounding areas:** The design drawings must clearly justify the walking 'Distance to Site' inputs in the Calculator. They must be legible and to scale. The major public entrances to the building must be clearly marked. The mass transport stops must be clearly indicated and labelled with the associated services.
4. **Extract(s) from timetables:** For each compliant route showing number of services at peak periods. The timetable provided must not be more than six months old at the date of submission. For private buses, provide a copy of the contract between the education establishment and the bus company, highlighting the number of bus services at peak periods to and from the establishment.

TRA-A Pedestrian and Cycle Links

1. **Short report:** Detailing how the Credit Criteria have been met illustrating the links from the site to public transport nodes and other nearby amenities.
2. **Design drawings:** Demonstrating that the pathways meet the Austroads standards (Part 14: Bicycles). Showing provision of adequate lighting to foot and cycle paths in accordance with AS11.58 Lighting for roads and public spaces, Part 3.1 Pedestrian area lighting. Indicating location of signposting on site plan in addition to signage graphic/text details;
3. **Extract(s) from the specification(s):** Detailing the provision of safe lighting and safe pedestrian routes with signage.
4. **Site plan:** To scale, in context of the surrounding area, showing the location of public transport nodes, nearby amenities, safe road crossing points, with the dedicated pedestrian/cycle connection(s) clearly identified.

TRA-B Travel Plan

1. **Travel Plan:** Addressing the following:

Site Specific Transport Assessment

This assessment must be carried out at preliminary design stage (before design approval), and be reviewed at final design stage (prior or during construction phase). The assessment must consider:

- The local environment for pedestrians and cyclists.
- Public transport/private bus links serving the site.
- Facilities for cyclists.
- Car parking provisions (with a view to encourage a reduction in the use of cars). In part some reference could be made to TRA-1 Car Park Minimisation if that credit has been achieved.

Transport Improvement Assessment

This section must provide recommendations, based on the Site Specific Transport Assessment, on measures that will reduce the environmental impact from transport, including the following where appropriate, but not limited to:

- Provision of priority parking spaces for car share schemes.

- Provision of dedicated cycle storage facilities and cycle lanes on site, and adjoining lanes off site where applicable.
- Negotiating improved bus services (where appropriate) e.g. altering bus routes or offering discounts.
- Restricting and/or charging (metering) for car parking.
- Travel opportunities.
- This section must include a plan of measures that address travel options, including as a minimum:
 1. Reduction in single occupancy car journeys to and from the facility e.g. car pooling.
 2. Promotion of walking.
 3. Promotion of cycling.
 4. Promotion of public transport/private buses.
 5. Deliveries and contractor vehicles.
 6. Visitors transport.
 7. Building user information.

This section must provide recommendations with an associated plan on how information about available transport facilities e.g. walking, cycling and public transport, should be communicated to the building users to encourage reduced car use. Also refer to TRA-4 for possible demonstration.

2. **Travel plan endorsement:** demonstrating that recommendations of the travel plan are endorsed and supported by the appointed Board of the development and the relevant territorial authority.

Water

WAT-1 Occupant Amenity Potable Water Efficiency

Please refer to the Additional Guidance section of WAT-1 Occupant Amenity Potable Water Efficiency within Green Star - Office Design V1 for further guidance on how to input into the Water Calculator prior to the release of the Education Technical Manual with the final tool.

1. **A copy of the completed Potable Water Calculator:** Signed and dated by a project team member.
2. **Short report:** Including a description of all water efficient features in the building, a description of any water reuse systems installed and detailed calculations showing capacity.
3. **Extract(s) from the specification(s):** Showing all hydraulic fittings required, all water collection and re-use systems and describing the system. The specification should detail the capacity of the system as described in the attached report.
4. **Design drawing(s):** Showing the location of all water re-use or collection systems including the location of water storage systems.
5. **Relevant authority approval:** For water reuse systems.

WAT-2 Water Meters

One point is awarded where it can be demonstrated that water meters are installed to all individual building supplies and linked to any electronic management system that provides an alarmed leak detection system. An additional point is available where it can be demonstrated that all 'major' water uses are metered separately within each building targeting certification (e.g. bathroom water consumption, cooling towers, irrigation and wash down systems, recycled water systems, rainwater systems, rainwater collection systems and hot water services).

To achieve the point, all distinct and separate buildings on the campus or school grounds must have their water supplies individually metered. Furthermore, the Assessors will not award the point unless there is an effective system for collecting, recording and monitoring data from the sub-meters, as well as alerting the facility management of any change in water consumption trends such as leaks, during the building's operation. In most cases, effective design will lead to automated monitoring systems, such as a Building Management System (BMS). Water sub-meters must be linked to such systems to monitor water data. The BMS or equivalent system must provide a leak detection system and include an alarm that is triggered in the event of a new trend in water consumption (e.g. increased after-hours consumption).

The Assessors will not award the additional point unless the water uses nominated are metered separately and correlate with other documentation regarding the major water uses within the project.

Major water uses are considered to include the following as a minimum (where installed): bathrooms, showers (if provided for at least 5% of staff), evaporative heat rejection systems, irrigation systems, wash-down systems, recycled water supply, rainwater supply and humidifiers.

The Assessors reserve the right to require separate sub-metering on other water uses within the building if they are deemed equally substantial. If rainwater is collected for irrigation and includes no mechanical distribution system then metering is not required, documentation should reflect this. Separate metering of rainwater supply is not required if rainwater is used solely for manual irrigation.

The Assessors will be looking for consistency with information provided for other water credits (e.g. WAT-1, WAT-3, WAT-4), where applicable.

1. **Design drawings or schematics:** Clearly showing the locations of all water meters and the associated water use.
2. **An extract(s) from the specification(s):** Showing the requirements for water meters on all major water uses.
3. **Short report:** Describing the leak detection capability of the BMS or equivalent compliant system.

4. **BMS schedule:** Showing the connection of water meters to the BMS or equivalent compliant system.

Where the additional point is claimed

1. **An extract(s) from the specification(s):** An extract from the specification showing that the water meters are to be connected to the alarmed BMS or equivalent compliant system.
2. **List of all major water uses:** In the building, referencing the design drawings and stating which uses are supplied by rainwater if applicable.

WAT-3 Landscape Irrigation Water Efficiency

Irrigation systems (within the construction zone) with 90% water sourced from rainwater collection or recycled water

1. **Short report:** By a qualified engineer describing the rainwater collection or water reuse system including calculations showing tank sizes and demonstrating that the system will be able to provide 90% of the water requirements for the landscape irrigation within the construction zone, and referencing all other required documentation as appropriate.
2. **Extract(s) from the specification(s):** Showing how the recycled/rainwater system is to be provided.
3. **Design drawings:** Showing the location and design of the recycled water/rainwater system.
4. **Relevant territorial authority approval:** For water reuse system.

Water efficient irrigation systems (within the construction zone)

1. **Short report:** By a landscape architect detailing the water efficient irrigation system and demonstrating that it will meet all of the requirements of the Credit Criteria.
2. **Extract(s) from the specification(s):** Showing how the water efficient irrigation system is to be provided.
3. **Design drawings:** Showing the location and design of the water efficient irrigation system.

Plants chosen are all drought-tolerant i.e. xeriscaping is used (within the construction zone)

1. **Short report:** By a landscape architect detailing the drought tolerant plants used.

Where the additional point is claimed for irrigation outside of the construction zone

1. **Short report:** Demonstrating that at least 40% of the water requirement for landscape irrigation outside of the construction zone is sourced from rainwater collection or recycled water associated with the building.

Where the Credit is claimed as Not Applicable

1. **Plans of the construction zone:** Showing the use of each area and clearly indicating either the lack of any landscaped area, landscaping area less than 1% of the construction zone or landscaping area less than 100m² (which ever is greater).

WAT-4 Heat Rejection Water

1. **Short report:** Prepared by a qualified engineer detailing either of the following as appropriate:
 - How the cooling towers have been designed to achieve at least six cycles of concentration. **OR** How the mixed mode system (including calculations) will reduce the water consumption (this must reference the calculations/modelling carried out in ENE-1/ENE-3). Please refer to the Additional Guidance section of WAT-4 Cooling Tower Water Consumption within Green Star - Office Design V1 for further guidance prior to the release of the Education Technical Manual with the final tool. **OR** The heat rejection requirements of the building and how these requirements will be met without the use of cooling towers or evaporative cooling.
2. **Extract(s) from the specification(s):** Demonstrating that the requirements detailed for six cycles of concentration are incorporated in the cooling tower design. **OR** The HVAC and natural ventilation features referenced in the engineers report above.
3. **Design drawing:** Highlighting the location of the cooling towers and the following as appropriate. Any supplementary equipment that may be required to achieve six cycles of concentration (e.g. water softener). **OR** Natural ventilation design features referenced in the report above.

WAT-C Fire System Water Consumption

1. **Short report:** Describing how the Credit Criteria has been met, including the proposed fire protection system, its operation and testing requirements, and justifying how the system design meets the Credit Criteria and how the collected water will be re-used on site.
2. **Extract(s) from the specification(s):** Identifying the fire protection system components and their properties that enable the system to meet the Credit Criteria.
3. **Design schematic fire suppression drawings:** For each typical floor, and drawings of the water storage and re-use system(s).
4. **Relevant hydraulic engineering drawings:** Demonstrating compliance with Credit Criteria.

Where the Credit is claimed as Not Applicable

1. **Short report:** Detailing how the project meets the required fire safety standards outlined in the NZBC without the use of a sprinkler system.
2. **Extracts from the fire engineering report:** Where it states that the building's fire suppression system has no sprinklers.

Materials

MAT-1 Shell and Core or Integrated Fitout

Not Applicable to this tool

MAT-2 Building Reuse

If the building(s) that are being demolished (as a consequence of the development that seeks Green Star assessment), extend beyond the site boundary, their total area must be used in the calculations for these credits.

If the development comprises both a refurbishment and a new addition, the Credit Criteria are to be read as pertaining to the refurbishment only.

Major structure is defined as floors, columns and beams, load bearing walls and where these are required for structural use by the new building, foundations. This Credit is based on gross building volume and not material volume, as these would be difficult to calculate. Therefore it requires that the existing major structure is re-used without significant strengthening or alteration works (where mass of new material is equal to or greater than 50% of the total mass for the re-used structure).

It is not necessary for the re-used structure to correspond to a similar proportion of the new building for this credit to be awarded. However, the re-used structure is to comprise at least 50% of the final building by volume and the design team is asked to confirm that this is the case. Refurbishment projects should readily achieve this credit.

1. **Short report:** That describes how the Credit Criteria have been met by describing what elements of the façade/structure are being retained, and providing calculations and a complete area/volume schedule for both the original and new buildings that demonstrate that the total area (for façade calculations) or volume (for structure calculations) retained from the original building(s) is sufficient to meet the Credit Criteria. All of the original façade/structure must be accounted for.
2. **Statement from the principle designer/architect or engineer:** Confirming that the total area (for façade calculations) or volume (for structure calculations) retained from the original building(s) is sufficient to meet the Credit Criteria.
3. **As-built drawing(s) of the original building(s):** Elevation drawings marked up and highlighted to show the location and area of the reused façade and floor plan drawings marked up and highlighted to show the location and associated building volume of the reused structure and indicating the building(s') GFA.
4. **Design drawing(s) of the new building:** Elevation drawings marked up to show the location and area of the reused façade and floor plan

drawings marked up to show the location and associated building volume of the reused structure and indicating the building(s') GFA.

Where the Credit is claimed as Not Applicable

1. **Short report from relevant territorial authority or BCA:** Stating that the site contained no building(s) at the time of purchase. **OR A Statement from the principle designer/architect or engineer:** Confirming that the total area (for façade calculations) or volume (for structure calculations) of the original building(s) is less than 20% of the GFA of the new building. Providing calculations and a complete area schedule demonstrating that the GFA of the original building(s) is less than 20% of the GFA of the building replacing them, referencing documentation from original buildings. All of the original façade/structure must be accounted for.
2. **Scaled site plans or aerial photographs:** Scaled site plans (with built area indicated and quantified) **OR Aerial photographs:** Generated at or prior to site purchase, showing the built area on the site.

MAT-3 Applied Coatings

Applied coatings/paints are defined as any liquid applied finishes. Including but not limited to paints, stains and varnishes and oils.

A general clause that stipulates that compliance is required with Green Star NZ Credit Criteria, even if the Compliance Requirements are included as an Appendix to the specification, will not be acceptable for demonstrating compliance.

1. **Summary Document:** Showing all types of applied coatings used on the project, the area (m²) covered by each type, whether or not it qualifies for the Credit and compliance with the Credit Criteria.
2. **Extract(s) from the specification(s):** Nominating applied coatings requirements and stipulating the applied coatings type for each requirement. Including a statement in the specification that the contractor is required to obtain approval of the design team or client before substituting the applied coatings listed in the specifications.
3. **Proof of independent certification:** Relevant certificates for the nominated products showing compliance with a materials certification body recognised by the NZGBC (A list of recognised Eco-Labels is available on the NZGBC website).

MAT-4 PVC

This Credit addresses all major standard PVC uses in base buildings, deemed to include pipes, pipe insulation, conduits, wire and cable sheathing, flooring, wall coverings and window blinds. Reduction in PVC is demonstrated by cost against the reference case in which PVC is specified for all of these uses.

The cost of materials used to replace the standard PVC uses is not relevant. What is relevant is the amount of money that was not spent on PVC for those uses. The calculations for PVC reduction are to be based on the cost of the PVC only, not on the cost of the entire product if it consists of more than just PVC. Please refer to the Additional Guidance section of MAT-7 PVC Minimisation within Green Star - Office Design V1 for further guidance prior to the release of the Education Technical Manual with the final tool.

The Assessors will not award points unless:

- The non-PVC products reduces the amount of PVC used in the project.
- All of the major standard PVC uses within the project have been accounted for.
- The reference case has been established accurately.
- The substitution of PVC is clearly documented and part of the design; and The cost reduction has been appropriately, reasonably and transparently calculated against the reference case.

If any component of the project is delivered as shell and core or integrated fitout, please refer to the Additional Guidance section of MAT-7 PVC Minimisation within Green Star - Office Design V1 for further guidance on applicable submission requirements prior to the release of the Education Technical Manual with the final tool.

1. **A calculations summary sheet:** Nominating the percentage reduction in PVC achieved and the points scored.
2. **A copy of a documented schedule:** Of all standard and actual PVC uses in the project (see 'Additional Guidance' Green Star - Office Design Version1).
3. **Quantity Surveyor report:** Including itemised calculations of the total estimated costs of standard and actual PVC uses in the project.
4. **Extract(s) from the specification(s):** That relate to all major standard PVC uses.

Please refer to the Additional Guidance section of MAT-7 PVC Minimisation within Green Star - Office Design V1 for further guidance on the above Documentation Guidelines prior to the release of the Education Technical Manual with the final tool.

MAT-5 Insulation

1. **Summary document:** Listing all thermal insulation used on the project, the area (m²) covered and whether or not it qualifies for the Credit and compliance with the Credit Criteria.
2. **Extract(s) from the specification(s):** Nominating wall and roof/ceiling insulation requirements and stipulating the insulation type for each requirement. Including a statement that the contractor is required to obtain

approval of the design team or client before substituting the insulation listed in the specifications.

3. **Proof of independent certification:** Relevant certificates for the nominated products showing compliance with a materials certification body recognised by the NZGBC (A list of recognised Eco- Labels is available on the NZGBC website).
4. **Quantity surveyor report:** Estimating the total area insulated as a proportion of the project's total insulated area.

Where the Credit is claimed as Not Applicable

1. **Quantity surveyor report:** Signed statement from a quantity surveyor confirming that insulation is not used in the project.

MAT-6 Sustainable Timber

1. **Statement from principle designer, architect, engineer or quantity surveyor:** Confirming that the total percentage amount claimed (by volume) of timber used within the building is sufficient to meet the Credit Criteria. All of the timber within the project must be accounted for. A list of the timber treatments specified for each durability requirement (if additional point is claimed).
2. **Timber schedule:** Of all timber uses in the project and the proposed material for those uses including treatment.
3. **Extract(s) from the specification(s):** Demonstrating compliance with the Credit Criteria requirements, stipulating the timber source for each instance and that the evidence confirming compliance with the Credit Criteria (e.g. FSC Certificates) and receipts be kept and logged. Stating the timber treatment to be used for each application must not exceed NZBC requirement (if additional point is claimed).

Where the additional point is claimed

1. **Statement from principle designer, architect, engineer or quantity surveyor:** A list of the timber treatments specified for each durability requirement.
2. **Extract(s) from the specification(s):** Stating the timber treatment to be used for each application must not exceed NZBC requirement.

Where the Credit is claimed as Not Applicable

1. **Extract(s) from the issued contract:** That includes the project's total value.
2. **Quantity surveyor report:** Estimating the total timber cost (including of the existing timber if part of refurbishment) as a proportion of the project's total value.

MAT-7 Concrete

Projects can either use option one or option two for demonstrating compliance but not both.

Option One

1. **Short report:** That provides a summary of how the Credit Criteria have been met by providing details on:
 - New concrete uses in the project, with the description, and volume, clearly identified for each mix and use.
 - A schedule stating the respective volume of new and existing concrete demonstrating the total volume satisfies the Credit Criteria. All of the concrete used in the project must be accounted for.
2. **A statement from an engineer, architect, quantity surveyor, building owner or building manager:** Confirming that the total percentage of the new concrete as noted in the short report is correct and has an independent certification in accordance with the Credit Criteria.
3. **Extract(s) from the specification(s):** Nominating how the Credit Criteria will be met, accounting for all concrete in the project. Demonstrating Credit Criteria requirements, stipulating the concrete source for each requirement and that the evidence confirming compliance with the Credit Criteria (e.g. third party certificates) and receipts be kept and logged. Stating that the contractor is required to obtain approval of the design team or client before substituting the concrete mix/batch listed in the specifications.

Option Two

1. **Short report:** That provides a summary of how the Credit Criteria have been met by providing details on:
 - New concrete uses in the project, with the description, and volume, clearly identified for each mix and use.
 - A schedule stating the respective volume of new and existing concrete demonstrating the total volume satisfies the Credit Criteria. All of the concrete used in the project must be accounted for.
2. **Extract(s) from the specification(s):** Which nominates the proportion of recycled aggregate to be used and which requires that the recycled aggregate be classified as Class 1 RCA (in accordance with HB 155-2002). A copy of the section of the structural concrete specification which nominates the proportion of inert filler/industrial waste product/pozzolanic material to be used in place of cement. Where this requirement is not general and is different for different concrete applications, also provide a summary sheet showing a breakdown of the concrete uses, volumes and substitutions. This summary sheet is to be clearly reflected in the structural concrete specification, which must clearly define the replacement schedule for cement.

Where the Credit is claimed as Not Applicable

1. **Extracts from the main building contract:** That includes the total value of the project.

2. **A statement from a quantity surveyor:** Estimating the total concrete material cost as a proportion of the project's total value and confirming that the proportion of concrete is less than 1% of the total contract.

MAT-8 Steel

1. **Statement from principle designer/ architect/ engineer or quantity surveyor:** Confirming that the total percentage amount claimed (by mass) of steel used within the building(s) is sufficient to meet the Credit Criteria. All of the steel within the project must be accounted for. If steel was supplied for uses outside the building structure, these uses must be clearly identified and are excluded from the calculations.
2. **Quantity surveyor report:** Which estimates the total mass and material cost of the steel within the building structure as a proportion of the project's total value.
3. **Steel design schedule that is an official document appended to the specification:** Showing all of the steel uses in the project and indicating the quantity of the post-consumer recycled content for each steel use.

Where the Credit is claimed as Not Applicable

1. **Extracts from the main building contract:** That includes the total value of the contract.
2. **Quantity Surveyor report:** Estimating the total steel material cost as a proportion of the project's total value.

MAT-9 Floor Coverings

1. **Summary document:** Listing all types of flooring to be used on the project. All typical flooring areas must be clearly documented, the area (m²) covered by each type and whether or not it qualifies for the credit.
2. **Extract(s) from the specification(s):** A copy of each section of the specification nominating flooring requirements and stipulating the material types for each requirement. A statement in the specification that the contractor is required to obtain approval of the design team or client before substituting the flooring listed in the specifications (and alternatives for the nominated products are required to comply with the Credit Criteria).
3. **Proof of independent certification:** Relevant certificates for the nominated products showing compliance with a materials certification body recognised by the NZGBC (A list of recognised Eco-Labels is available on the NZGBC website).

Where the Credit is claimed as Not Applicable

1. **Quantity surveyor report:** Signed statement from a quantity surveyor confirming that floor coverings are not used in the project.

MAT-10 Recycling Waste Storage

The recycling storage area must be sized, at a minimum, in accordance with Table Mat-1.1 and be designed to accommodate the following recyclables, as a minimum: paper, glass, plastics and metals.

Table Mat-1.1		
UFA (m ²)	Min area of recyclable storage space (% of UFA)	
	2 points	1 point
500	1.5%	1.1%
1,000	0.8%	0.60%
5,000	0.35%	0.25%
10,000	0.25%	0.2%
20,000	0.15%	0.125%

Where the UFA of the building falls between the figures outlined in Table Mat-1.1, linear interpolation must be used to determine an appropriate percentage area for the recyclable storage space. For UFA less than 500m² the minimum area required is 5.5 m² for 1 point and 7.5m² for 2 points. For projects with a UFA above 20,000m² the minimum area required is 0.125% for 1 point and 0.15% for 2 points.

1. **Short report:** That describes how the Credit Criteria have been met by providing calculations demonstrating compliance with the sizing requirements for the recycling storage area outlined in Table Mat-1.1 and confirming that the location and layout of the storage area is easily accessible by recycling collection vehicles.
2. **Design drawing(s):** Marked up to show the location of the recycling storage area(s), with dimensions indicated and the route from the recycling storage area(s) to the furthest part of the UFA (on plan) with dimensions indicated. Exclude vertical distances for lifts and stairwells. In order to be awarded the point, the distance must be less than 100m.

Where the additional point is claimed

1. **Education facility policy document:** Demonstrating that a facility wide recycling/separation scheme is in place and it addresses the recycling/separation of, as a minimum, paper, glass, plastics and metals.
2. **Contract document:** Between education facility and waste recycling company confirming that the waste collected/separated as a result of this scheme is removed from the education facility for recycling, and the types of waste collected/separated (as a minimum: paper, glass, plastics and metals).

MAT-A Furniture

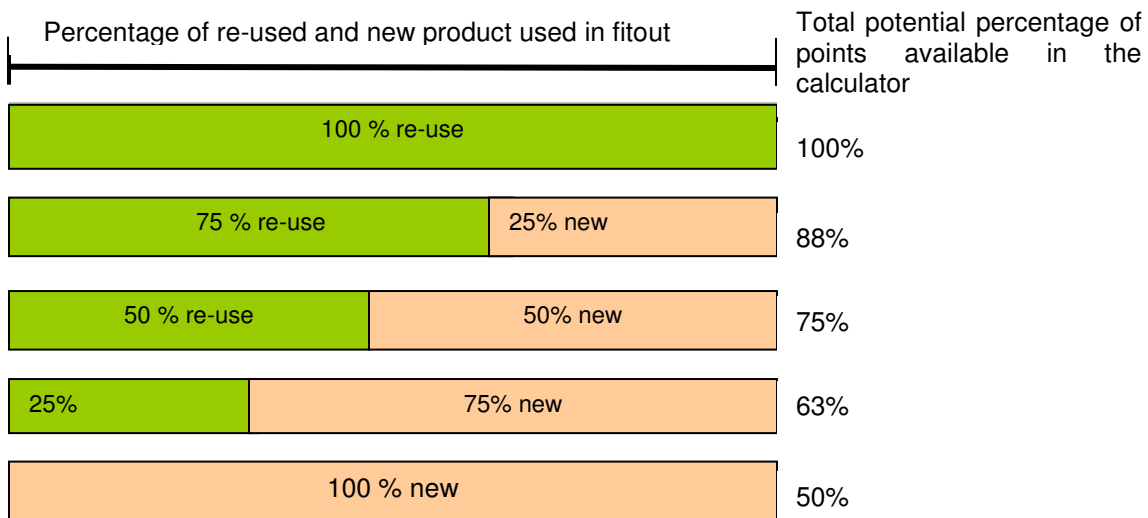
This calculator is to be used for all of the following items:

- Workstations

- Chairs
- Tables
- Storage units
- Flooring products (carpet, resilient flooring, parquet, tiles, etc).

Research has shown that re-use of existing products provides the strongest environmental benefits, therefore the higher the percentage of re-used items (including purchased second-hand) the more points will be awarded. In a number of cases, 100% re-use of existing items will not be possible, the emphasis will then be to source the remainder of the products from manufacturers/suppliers that have minimised their environmental impact from a life-cycle perspective.

The points awarded within the MAT-A Calculator are summarised in the following graphic representation:



The calculator rewards new products where it is demonstrated that new furniture items used in the fitout have a reduced environmental impact and meet the following criteria:

- **Certified Products:** Where the product(s) are independently certified as having lower environmental impact, as verified through a materials certification body recognised by the NZGBC (List of approved Eco-labels are available on the NZGBC website). **AND/OR**
- **Durability:** Where the product has an extended warranty period as defined below. **AND/OR**
- **Product Stewardship:** Where the manufacturer or supplier operates a product stewardship scheme as defined below.

Points awarded in the calculator are then adjusted to reflect the total number of points available for the Credit.

Certified Products

A project is currently being undertaken by the NZGBC and the Green Building Council of Australia to look at how Eco-labels are rewarded in the Green Star Interiors tools. Not all Eco-labels measure the same criteria or are as comprehensive as others. This creates difficulty when awarding points based on an Eco-label. The project is looking at how to evaluate these differences and award points accordingly.

The list of approved Eco-labels will be available on the NZGBC website and will be updated regularly as more Eco-labels have been assessed. Information will be published in the NZGBC newsletter and website when available.

Durability

The NZGBC recognizes that extending the life of products that do not require resource consumption for their use provides strong positive impacts on the environment and contributes to the overall sustainability of products. To be rewarded for “extended life warranty”, products must have the following warranty periods.

- Workstations – 10 years +
- Chairs – 10 years +
- Tables – 10 years +
- Storage – 10 years +
- Joinery – 10 years +
- Flooring products – 15 years +

Product Stewardship Scheme

Many suppliers of building products in NZ have the potential to import products that have an Eco-label and/or a take back scheme in the original country of manufacturer. In the product stewardship section, reward is only given if the local supply-chain in NZ can guarantee a product-take-back scheme to ensure end-of-life re-use or reprocessing options are implemented, and to minimise waste going to landfill.

Product stewardship schemes must provide a take-back scheme locally in NZ and proof that end of life reprocessing takes place must be verifiable with contracts, invoices, etc to avoid waste products just stock-piling up in warehouses.

Points will not be awarded unless it is demonstrated that all furniture has been included in the Furniture Calculator.

1. **Short report:** That describes how the Credit Criteria have been met by including a completed Furniture Calculator and referencing the supporting documentation.
2. **Proof of independent certification:** Relevant certificates for the nominated products showing compliance with a materials certification body recognised by the NZGBC (A list of recognised Eco-Labels is available on the NZGBC website).

3. **Furniture schedule included in the specification:** Detailing all the furniture supplied as part of the contract.

Where the Credit is claimed as Not Applicable

1. **Contactors quoted contract price or QS estimated contract price.**
2. **QS, project manager or architects schedule showing cost of furniture. OR Letter of confirmation or written contract clause** showing that loose furniture is not part of design team's contract.

MAT-B Walls, Partitions and Joinery

The Walls, Partitions and Joinery Calculator works in a similar way to the Furniture Calculator (see guidance for MAT-A Furniture). However the new products used for this Credit are rewarded within the calculator as follows.

The calculator awards points where it is demonstrated that all new walls and partitions used in the fitout have a reduced environmental impact by meeting the following criteria:

- Where 95% of the board used in joinery or walls and partitions is independently certified as having lower environmental impact, as verified through a materials certification body recognised by the NZGBC (List of approved Eco-labels are available on the NZGBC website). **AND/OR**
- Where 95% of the finishes applied are independently certified as having lower environmental impact, as verified through a materials certification body recognised by the NZGBC (List of approved Eco-labels are available on the NZGBC website). **AND/OR**
- Where 70% of the permanent fixed walls and/or joinery within the tenancy are designed for disassembly and able to be reused or recycled (based on a linear metre basis to be calculated by the Quantity Surveyor). This includes stud, lining aluminium and insulation components.

1. **Short report:** Showing all types of walls/partitions and/or joinery used in the project, the area (m²) covered by each type, whether or not it qualifies for the Credit and compliance with the Credit Criteria, referencing the supporting documentation and including a completed Walls/Partitions and Joinery Calculator.
2. **Statement from the designer:** Confirming that at least 70% of the walls/partitions and/or joinery have been designed for disassembly and that they can be reused or recycled.
3. **Design drawing(s):** Showing how the walls or joinery have been designed for disassembly and the interior floor plan indicating the reused and new Walls/partitions/joinery.
4. **Proof of independent certification:** Relevant certificates for the nominated products showing compliance with a materials certification body recognised by the NZGBC (A list of recognised Eco-Labels is available on the NZGBC website).

MAT-F Landscaping Materials

1. **Short report:** That describes how the Credit Criteria has been met, including the scope and extent of the construction works for all hard and soft landscaping.
2. **Design Drawings:** Of all landscaped areas showing finished ground levels. Each bulk material shaded, with a depth and volume stated. Showing the build up for each bulk material and clearly showing where more than one material is layered over another. The volume of these different layers of materials must be shown on the plans and correspond with what is stated in the schedule.
3. **Survey plan of site:** Showing original levels.
4. **Schedule of bulk materials:** Based on volumes given on drawings, showing total volume of bulk materials and demonstrating compliance with the Credit Criteria.
5. **Extract(s) from the specification(s):** For each bulk material being used for landscaping, showing suitable clauses to ensure that the Credit Criteria will be met.
6. **Detailed planting schedule:** Clearly showing all plants specified for the project including their size at time of planting, with suitable requirements regarding sourcing from within the local area. Ideally plants should be specified that are endemic to the area, but as a minimum, the plants must have been grown from seed within the local area. Plants grown elsewhere but sourced from a local nursery will not be accepted.
7. **Quotes and planting schedule:** From local landscaping companies identifying total cost for supply of 'local' plants and highlighting any non-local plants and their total cost to indicate that the Credit Criteria have been met. A minimum of three quotes must be provided.
8. **Extract(s) from the contract:** Stipulating that local sourcing of landscaping materials must be adhered to by both contractor and sub-contractors, ensuring that the Credit Criteria are met.

MAT-G Recycled Content and Re-used Products and Materials

1. **Short report:** Summarising all recycled-content/reused products and materials with recycled content clearly stipulated and providing a calculations summary sheet nominating the percentage value of the recycled-content/reused products and materials relative to the project contract value, in accordance with the Credit Criteria.
2. **Extract(s) from the specification(s):** Where the recycled-content/reused products and materials are described with recycled content clearly stipulated.
3. **Extract(s) from issued contract:** Indicating the project's total contract value.

Where products are reused from the existing building or any other building

1. **A statement from the building owner:** Confirming that the products/materials will be provided to the new building.

Ecology

ECO-1 Ecological Value of Site

1. **Extract(s) from the relevant city/district plan and/or regional plan:** Demonstrating the zone of the site prior to development and dated prior to resource consent approval.
2. **Resource Consent:** From relevant territorial authority granting consent for the subject development.
3. **Correspondence from the relevant territorial authority:** Stating that the site prior to development was:
 - Not within 100m of a natural wetland. **AND**
 - Not on land containing threatened plant communities or organisms. **AND**
 - Not on land containing significant native plants that cannot be practically retained within the proposed development.

ECO-2 Re-use of Land

1. **Calculations:** Demonstrating that the existing/previous development makes up at least 75% of the new development site.
2. **Copies of original plans and drawings:** Of the development on the site that occurred within the last 10 years.
3. **Aerial photograph:** Clearly showing the existing/previous built environment of the nominated site.

ECO-3 Reclaimed Contaminated Land

1. **Site assessment or contamination report:** Completed in line with Ministry for the Environment (MfE) Contaminated Land Management Guideline 1 (2001) clearly documenting pre-existing contamination and demonstrating appropriate risk assessment for contaminant source, pathway and receptors. Where contamination is found to be present and New Zealand trigger levels do not exist, the tiered approach detailed in the MfE Contaminated Land Management Guideline 2 (2001) for using values from published material elsewhere in the world should be used.
2. **Signed statement from an environmental specialist:** Confirming that the site has been correctly and appropriately remediated.

ECO-4 Change of Ecological Value

1. **Ecological Assessment Report:** That is project specific addressing matters set out in the 4th Schedule Resource Management Act 1991 including the following:
 - A list of each bio-region in which the site is located and the breakdown of existing land use type by area and which references the aerial photograph or original plan drawings.

- A list of each land type areas after redevelopment of the site and the breakdown of landscaping proposed land use type by area and which references design drawings.
 - Indigenous biodiversity values (including, but not limited to, species, habitat, and ecosystem diversity, quantity and quality assessment).
 - Ecosystem services (including, but not limited to, water quality protection, carbon sequestration/uptake, air quality protection, temperature and shade modulation and amenity provision).
 - All other ecological matters required by the relevant city/district and regional plans
2. **Statement from ecologist:** Confirming that the ecological assessment report complies with the requirements of the Credit.
 3. **Change of Ecology Calculator sheet.**
 4. **Aerial photograph or copies of original plan drawings:** Of the site prior to the commencement of development, with each ecological type and area clearly marked and demonstrated on the drawings.
 5. **Design drawings:** Of the site design layout clearly showing each ecological type and area (m²).
 6. **Extract(s) from the specification or landscaping schedule:** Where planting is nominated if more than one point is claimed for this Credit.

ECO-5 Topsoil and Fill Removal from Site

1. **Extract(s) from the specification(s):** Where the restriction on the importation and exportation of fill and top soil to and from the site is stated.
2. **Plans and calculations:** Showing the volume of topsoil on site prior to development and confirmation that this will not be removed off-site.
3. **Plans and calculations:** Showing volumes of cut and fill on-site and that there is no exportation of fill off-site.
4. **Topsoil management plan:** For the duration of the project which addresses excessive storage heights, storage duration, stockpile movement, cover from rainfall, mixing with fill, topsoil reapplication staging and detailed plans of transient storage areas.

ECO-D Campus Master Plan

1. **Proposed master plan:** From an architect detailing how the entire development has been planned to limit its environmental impact. It must also include:
 - Site issues: topography, sun-path, prevailing wind, water-courses, ecology, etc.
 - Response to site: how site issues informed the design environmentally.
 - Nominated credits: how the nominated credits have informed the master plan design and are integral in its future development.

- Evidence of compliance with nominated credits: can be a summary of credits chosen with reference to their page locations in the submission for easy reference for Assessors.
- 2. **Design drawings:** Showing the site master plan of the campus for the current construction phase in addition to all future phases.
- 3. **Board level endorsement of master planned design:** Signed-off copy of the site master plan from the board and minutes of sign-off meeting.

ECO-E Bio Diversity and Enhancement

1. **Short report:** From a landscape architect giving an overview of the project design with specific reference to how it encourages greater local biodiversity and meets the Credit Criteria.
2. **Planting schedule:** From a landscape architect listing species and numbers planted.
3. **Landscape plan:** From a landscape architect demonstrating:
 - The total area landscaped.
 - The location of species identified in the planting schedule.
 - How the design, material and plant choice increase local biodiversity.

Emissions

EMI-1 Refrigerant ODP

Where NO refrigerants are used in the building the Assessors will require evidence that the base building does not include air-conditioning. The applicant must provide evidence showing that the building is naturally ventilated or mechanically ventilated without refrigerant-based heating and cooling.

The Assessors will not award points for 'no refrigerants' unless it is demonstrated that refrigerants are not required by the building and this is consistent with other credit claims.

1. **Short report:** Prepared by a mechanical engineer that describes how the Credit Criteria have been met describing the HVAC system and all its components, identifying all systems that contain refrigerant and indicating all of the type and volume of refrigerant(s) used in the system(s). Where the project is a refurbishment, describing how the existing system(s) are to be converted, confirming this can be performed and maintained viably and without any refrigerant loss to the atmosphere. Where no refrigerants are present in the project, explaining how no refrigerants are required for proper operation of the system(s).
2. **Extract(s) from the specification(s) or contract:** Where the requirements for the HVAC system are stipulated, stating that any refrigerant must have an ODP of zero. Where the project is a refurbishment, stipulating the requirements for the conversion of the existing system.

Where the credit is claimed as Not Applicable the following shall be provided

Note: For naturally and mechanically assisted naturally ventilated buildings only.

1. **Short report:** For naturally ventilated and mechanically assisted naturally ventilated, referencing either the schedule of openings, the empirical calculations or the computer modelling report. The report shall also demonstrate that the building is designed in accordance with AS1668.2-2002.
2. **Schedule of ventilation openings:** That identifies all spaces within the building, provides their sizes in UFA, and identifies which are naturally ventilated or mechanically assisted naturally ventilated spaces, lists the sizes of the ventilation openings and confirms that the deemed-to-comply requirements of AS1668.2-2002 are met for at least 95% of the UFA. **OR Empirical calculations:** Required for demonstrating compliance with AS1668.2-2002 to the local authorities. **OR Computer modelling report:** To be submitted to the local authorities which demonstrates that the design meets the intent of AS1668.2-2002.
3. **Design drawing(s):** (Section, elevation and other drawings as appropriate) for each typical naturally ventilated and mechanically assisted naturally ventilated space, with ventilation openings, inlets and outlets clearly indicated and dimensioned.

EMI-2 Refrigerant GWP

Where NO refrigerants are used in the building the Assessors will require evidence that the base building does not include air-conditioning. The applicant must provide evidence showing that the building is naturally ventilated or mechanically ventilated without refrigerant-based heating and cooling.

The Assessors will not award points for 'no refrigerants' unless it is demonstrated that refrigerants are not required by the building and this is consistent with other credit claims.

1. **Short report:** Describing the designed heating and cooling or HVAC systems OR explaining how the building systems work without the use of refrigerants.
2. **Extract(s) from the specification(s) or tender contract:** That includes: A requirement for all refrigerants to have a GWP100 of less than 10; **OR A list of all refrigerant applications and details:** of which refrigerants are required to have a GWP100 of less than 10.
3. **Calculation(s):** By a qualified mechanical or building services engineer demonstrating that 100% of all refrigerants have a GWP100 of less than 10.

Where the credit is claimed as Not Applicable

Refer to EMI-1

EMI-3 Insulant ODP

1. **Summary sheet:** Listing all existing and specified thermal insulation materials, dates of installation and whether or not they meet the Credit Criteria.
2. **Extract(s) from the specification(s):** Referring to insulation requirements.

EMI-4 Watercourse Pollution

The stormwater quantity leaving the site should be modelled using an input of the 24 hour duration 1-in-2 year rainfall event. The baseline model output should simulate runoff for pre-development conditions using the impervious area designations of “Building” and “Impermeable/concreted area” in the “BEFORE” column of the Change in Ecology calculator. The model should simulate runoff from post-development conditions using the actual project design. When modelling the runoff from hardscape (buildings and impervious areas), a 10% hydraulic loss can be assumed.

Where both the base case and the design total stormwater runoff quantity are calculated to be zero during a 24 hour duration 1 in 2 year rainfall event (e.g. for green field sites) this will be deemed equivalent to a 90% reduction in stormwater quantity and receive two points.

The Assessor(s) will not award points for this Credit unless it is clear that the system meets the required stormwater quantity reduction levels and this is clearly documented.

1. **Short report:** Describing the stormwater management system. This will include a description of the design assumptions and calculations that demonstrate the baseline and built runoff quantity and how they have been achieved. Where the additional point is claimed, reference shall be made to the TRA-1 submission.
2. **Extract(s) from the specification(s):** Describing the stormwater management system. Where the additional point is claimed, the extract shall also detail the materials to be used for flashing, cladding and roofing.
3. **Site drawing(s):** Showing the systems included in the project design.

EMI-5 Reduced Flow to Sewer

1. **Short report:** Describing the system, how it works and its treatment capacity compared with typical demand annually, including how the annual percentage of water diverted from the sewer was calculated.
2. **Extract(s) from the specification(s):** Where the system is described. The specification is to detail the capacity of the system as described in the attached report.
3. **Design drawing(s):** Showing the systems and their location relative to the building including the location of water storage systems.
4. **Evidence of approval from the relevant territorial authority.**

EMI-6 Light Pollution

1. **Short report:** From the lighting engineer describing how the Credit Criteria have been met by detailing:
 - The external, internal perimeter and atrium lighting on the site
 - The areas illuminated, calculations or illumination diagrams (including horizontal and vertical light distribution) to demonstrate that no light spill is impacting the night sky or neighbouring properties in accordance with AS 4282-1997.
 - The average illuminance in outdoor areas shall not be above 20% of the minimum average levels given in AS/NZS 1680; or below a local controlling authority's maximum requirements.
2. **Extract(s) from the specification(s):** Where relevant lighting and its requirements are identified e.g. atrium, internal perimeter areas and external lighting.
3. **Design drawing(s):** Site plan indicating the location, aim points and type of all external luminaires, and marked up to show the area(s) that does not exceed the minimum requirements of AS/NZS 1680 for illuminance levels. Where a glazed atrium is present, atrium drawings shall be provided indicating the location and type of internal luminaires.

EMI-7 Purge Control

The Assessors will not award the point for this Credit unless the documented design clearly details purge control capabilities for each low pressure HVAC system.

1. **Extract(s) from the specification(s):** Detailing the availability of purge control for low pressure HVAC system equipment.

Where the credit is claimed as Not Applicable

Where a high pressure HVAC system is used in the building

1. **Short report:** Including a brief description of the high pressure HVAC system used or designed.
2. **Signed statement** from the sub-contractor confirming that the cooling systems installed were as per those described in the report above.

Where no refrigerants are used in the building and it is mechanically ventilated

1. **Short report:** Including a brief description of the design heating and cooling or HVAC systems explaining how the building systems work without the use of refrigerants.
2. **Signed statement** from the sub-contractor confirming that the cooling systems installed were as per those described in the report above.

Where no refrigerants are used in the building and it is naturally ventilated

1. **Signed statement** from the contractor, owner's project manager, or design professional confirming that the building meets the requirements for a naturally ventilated space, in accordance with IEQ-2.

EMI-8 Legionella

Naturally ventilated buildings

1. **Short report:** Prepared by a mechanical engineer that describes how the Credit Criteria have been met. Description of how the building complies with AS 1668.2-2002.
2. **Design drawing(s):** Showing openings, with dimensions clearly indicated and ventilation inlets and outlets.
3. **Extract(s) from the specification(s):** Where the HVAC system is described and its requirements are nominated, and where the hot and cold water systems are described, providing a statement requesting that the hot and cold water installation complies with all the recommendations of section 5 of the CIBSE TM13 document.

Mechanically air-conditioned buildings

1. **Short report:** Prepared by a mechanical engineer that describes how the Credit Criteria have been met. Indicating the type of the HVAC system.
2. **Design drawing(s):** Showing the HVAC system, with all components clearly nominated.
3. **Extract(s) from the specification(s):** Where the HVAC system is described and its requirements are nominated, and where the hot and cold water systems are described, providing a statement requesting that the hot and cold water installation complies with all the recommendations of section 5 of the CIBSE TM13 document.

Hot and cold water systems

1. **Short report:** Prepared by a mechanical engineer that describes how the Credit Criteria have been met. Description of how the building complies with all the recommendations of section 5 of CIBSE TM13: Minimising the risk of Legionnaires' disease.
2. **Design drawing(s):** Highlighting the relevant features recommended by section 5 of the CIBSE TM13.
3. **Extract(s) from the specification(s):** Where the HVAC system is described and its requirements are nominated, and where the hot and cold water systems are described, providing a statement requesting that the hot and cold water installation complies with all the recommendations of section 5 of the CIBSE TM13 document.