



### **The Facility Management Association of Australia's (FMA Australia) Building Services Special Interest Group (SIG) comments on Australian Green Building Council Green Star Office Asset Tool**

FMA Australia would like to acknowledge the significant amount of work undertaken by the FMA Australia's Building Services Special Interest Group (SIG) on the Green Star – Office Asset Rating Tool and is a key output of this group.

The Green Building Council of Australia developed and released the Pilot Version of the Office Asset rating tool in December 2004 for stakeholder review and comment. This rating tool is one of four tools within the Green Star suite of tools which are designed to rate Class 5 Commercial Office Buildings (as designed by the Building Code of Australia). The Green Star – Office Asset rates the environmental attributes of existing office buildings, independent of their tenants' operations or behaviour.

The submission highlights that FMA Australia is supportive of the objectives of the Green Building Council of Australia's "Green Star – Office Asset" rating tool initiative and seeks to provide constructive commentary, input and support to help ensure that the resulting rating tool is practical and effective in the marketplace.

**Green Building Council of Australia  
Green Star - Office Asset PILOT**

**Stakeholder Review  
&  
Comment Submission**

# Green Star Office Asset PILOT

## Stakeholder Review and Comment Submission

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### 1. Introduction

The Australian Green Building Council developed and released the Pilot Version of the Office Asset rating tool in December 2004 for stakeholder review and comment.

*“The Green Star – Office Asset rating tool is intended for use by commercial office owners to assess the environmental merits of their existing or future assets.”*

This Stakeholder Review and Comment Submission has been prepared on behalf of the Facility Management Association of Australia Ltd.

The FMA is supportive of the objectives of the Australian Green Building Council’s “Green Star – Office Asset” rating tool initiative and seeks to provide constructive commentary, input and support to help ensure that the resulting rating tool is practical and effective in the marketplace.

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#### **About the Facility Management Association of Australia**

FMA Australia (FMA) is the largest and most respected facility management professional association in Australia, representing those who make the decisions about Australia’s workplaces.

Members of FMA Australia are professionals involved in the strategic and operational management of facilities in public and private sector organisations. Since FMA Australia’s establishment more than 16 years ago, the FMA has seen significant growth, with currently more than 1600 members nationally. With branches in New South Wales, Victoria, South Australia, Western Australia, Queensland and the Australian Capital Territory, the FMA works to represent the national interests of facility managers and the industry sector.

FMA Australia seeks to promote the profession and increase understanding of the role of FM to business and the wider community. This includes encouraging the development of university courses in Facility Management, representing the interests of the industry to government and regulatory bodies, and encouraging wider promotion of Facility Management to senior management and media organisations.  
[www.fma.com.au](http://www.fma.com.au)

## **2. Summary of Comments**

### **2.1 General Comments**

The following general comments are offered as an overview of the pilot rating tool and its intended purpose:

- In reviewing this pilot rating tool the need to reward well designed buildings that may have been designed to Green Star design tools as they move into occupancy phase is recognised along with the need to reward well managed albeit not Green Star design rated existing buildings. It will be difficult to achieve an appropriate balance in this however it should not be impossible. The current pilot rating tool does not achieve the required balance and is at present canted to reward features that currently do not exist in the vast majority of existing buildings. The Specific Comments provided in this submission taken together support this view.
- Given that the Green Star Office Asset Pilot rating tool will be applied to existing buildings it may be appropriate to consider the introduction of a Three (3) Star rating to reflect good practice in building environmental management. Many of Australia's best environmentally managed existing buildings are limited in their fundamental design features to a modest level of energy efficiency. These buildings include many of the Premium and A Grade commercial buildings in our Capital Cities. For these buildings to access this rating tool a Three (3) Star rating may be required depending on the ultimate weighting profile of the rating credits.
- An alternative arrangement to a single rating tool for existing buildings is a second, separate tool for efficiency in existing buildings built or retrofitted prior to or without the Green Star design rating. This would provide an appropriate rating path for those buildings designed to a Green Star design rating to recognise the retention of the design standard through construction and commissioning into occupancy and operation. The second existing building rating tool would be focused on encouraging and recognising the markets efforts in making its existing stock of buildings the best it can be in terms of environmental impact. This arrangement however is likely on balance to be less satisfactory as it would serve to further confuse the market. One of the prime requirements of the market in this area is an even playing field, two rating tools for existing buildings would not support the development and market acceptance of a straightforward, commonly accepted and understood rating system. The Green Star Office Asset Pilot rating tool should be suitable for Green Star designed and non Green Star designed existing buildings. That is providing the balance of credits and their weighting is adjusted to

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

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appropriately recognise the relative performance achievements for both types of building within their particular improvement potential limitations.

- The Green Star Office Asset Pilot rating tool is a base building rating tool however it does recognise the influence that tenants have on base building environmental performance. Is it intended to develop the tool over time to cater for building tenancies only, both those designed to a Green Star Office Fit Out Rating and those that have not been design rated?
- Ideally whole building ratings would be done because of the interconnected “symbiotic” relationships between base building and tenants that affect the buildings environmental impact. And ideally the rating tool would encourage a Base Building Owner / Tenant Environmental “Compact” to achieve whole building ratings. Is it intended to develop the tool over time to cater for whole building ratings?

### 2.2 Specific Comments

Specific comments and suggestions are shown on the following pages against the Credit Rating summaries, the Building Input Sheet and the Available Credits and Weightings all as included in the Green Star Office Asset Pilot Microsoft Excel document.

# Green Star Office Asset PILOT

## Stakeholder Review and Comment Submission

### 3. Stakeholder Review and Comments

Detailed commentary and input on the pilot Office Asset rating tool is set out on the following pages:

#### 3.1 Management

| Ref No. | Title                   | Aim of Credit  | Credit Criteria Summary   | No. of Points Available | Comments   |
|---------|-------------------------|--|---|-------------------------|--|
| Man-1   | Commissioning - Clauses | To improve building services performance and energy efficiency through adequate <del>commissioning</del> and monitoring <b>and tuning</b> as part of maintenance service provider contracts. | 1 point is awarded where evidence can be provided to demonstrate that comprehensive quality monitoring have occurred within the last 12 months by the appropriate maintenance service providers (in accordance with ASHRAE Guideline 1, CIBSE Commissioning Codes or equivalent).<br>A further point is awarded where the point above is achieved AND the Operation and Maintenance Manuals are available on site or in Building Manager's Office (particularly for HVAC, lighting control and hot water systems), including details of<br>- design intent<br>- product information<br>- instructions for use and fine tuning of system<br>- as installed details<br>- commissioning/fine tuning data no more than 12 months old. | 2                       | <p>The intent of this credit requirement with respect to existing buildings is not clear. Does it require the recommissioning of the building, if so to what extent, does it require the checking of the commissioning of the building, if so to what extent. What "quality" exactly is to be monitored?</p> <p>In an existing building the monitoring of building services performance doesn't necessarily relate directly to commissioning and as such should not be called this, it will be confusing. ASHRAE Guideline 1, and CIBSE Commissioning Codes are not directly relevant to ongoing maintenance and or minor recommissioning for building tuning.</p> <p>It should relate to having sound and detailed maintenance, inspection and testing regimes in place to ensure that the building is running efficiently. These should relate not only to the operation of energy and water consuming systems but also to their start stop regimes as related to building occupancy requirements.</p> <p>It is important to realise that the provision of normal maintenance will not necessarily ensure efficient operation. Current normal maintenance practices are structured around the provision of reliable service, satisfactory internal conditions and other performance outcomes, and to some extent asset protection. They do not as a general rule directly address the need to prove these out comes in an efficient manner. As such compliance with this Credit Criteria will require improvements to the current maintenance specification and delivery paradigms. There are few references that relate to energy efficient maintenance, AIRAH Guideline DA19 HVAC&amp;R Maintenance may be appropriate to cite, CIBSE also has a reference that may be appropriate to cite.</p> <p>Operation and Maintenance Manuals: should be available, they should be of a certain standard, they should be complete and accurate, they should reflect and ongoing program of building environmental performance improvement</p> |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title                           | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments   |
|---------|---------------------------------|---|--|-------------------------|--|
| Man-2   | Commissioning - Building Tuning | To improve energy efficiency and comfort within the building in all seasons and to ensure independent advice is sought.   | 1 point is awarded where evidence can be provided showing a building owner/manager commitment to ongoing re-commissioning and fine tuning of base-building HVAC and control systems. This requires minimum quarterly fine tuning reviews and annual air commissioning, including comparison against energy targets.<br>A further point is awarded where the point above is achieved AND evidence can be provided to demonstrate that an independent and experienced 'agent' has been appointed to provide advice to the client and service providers and to monitor and verify the commissioning of HVAC and building control systems. | 2                       | The cost of recommissioning air conditioning can be VERY considerable and not typically done except after system changes. Building tuning is a different process and is usually carried out after an expert appraisal of the systems and their operation and performance and energy consumption. This appraisal is best carried out by professional engineers working with the maintenance providers and in some instances commissioning specialists. From this appraisal improvement opportunities will be identified together with their potential to reduce energy consumption and meet energy targets. These opportunities will fall into 2 categories, firstly those requiring change to the systems, and secondly those requiring a program of adjustment and tuning. These are often iterative processes that require a period of monitoring. |
| Man-3   | Building Users Guide            | To recognise and encourage the provision of guidance to enable building users to achieve the environmental performance envisaged by the design team or latest energy audit, and to manage future changes that promote efficiency and environmental quality. | 1 point is awarded where evidence can be provided to demonstrate that there is provision of a simple guide, including information relevant for the building users, occupants and tenant representatives.<br>The guide shall cover: energy & environmental strategy, monitoring & targeting, building services overview, transport facilities, materials & waste policy and Expansion/Refurb/Tenancy considerations/requirements.   | 1                       | In addition to the base building Operating and Maintenance manuals recognised elsewhere in this rating tool there are 2 off aspects that could / should be addressed in this Credit Criteria:<br>1. A clear Design Guideline should be in place for any building alterations to ensure that the building environmental footprint is either reduced by any works or at the very least is not made worse.<br>2. A clear Operating Guideline should be in place to assist building tenants reduce the environmental impact of their space and that of the whole building.   |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title                                    | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments  |
|---------|--|---|--|-------------------------|---|
| Man-4   | Environmental Management and Performance | To recognise the adoption of an environmental management system/plan for the management and operations of the building. | <p>Up to 4 points are awarded as follows:<br/>1 point is awarded where the building manager is contractually required to provide and implement a comprehensive Environmental Management Plan (EMP) for the operation of the building.<br/>Up to an additional 3 credits are awarded, one for each two of the following that are included within the EMP:</p> <p>a) Commitment to energy monitoring (monthly minimum) and consumption reduction targets;<br/>b) Commitment to waste reduction/recycling monitoring (monthly minimum) and landfill disposal reduction targets ;<br/>c) Commitment to water monitoring (monthly minimum) and consumption reduction targets;<br/>d) Commitment to regular maintenance which enables building services to run as efficiently as possible and is in accordance with the AIRAH Guideline DA19 HVAC&amp;R Maintenance;<br/>e) Use of low environmental impact cleaning processes;<br/>f) Procurement of low environmental impact consumables (paints, light fittings, ceiling tiles, flooring etc).<br/>The applicant must provide at least one year of measured report data to demonstrate compliance with the above.</p> | 4                       | <p>The establishment and demonstrated application of an appropriate EMP is the most important aspect of the MANAGEMENT Credit category.<br/>This process would ideally take the form of a compact between the base building and the tenant(s) and must go beyond the commitment to undertake these activities it must require the demonstration of appropriate reporting to stakeholders and the pursuit of a continuous improvement program to reduce the buildings environmental impact.<br/>It should also include the establishment and demonstrated application of a tenancy fit out guideline ensuring that changes in the building are carried out in such a way as to reduce the buildings environmental impact (ref comments in Man -3 )<br/>It should also include the establishment and demonstrated application of a base building operational guideline ensuring that the operation and maintenance of the base building services is carried out in such a way as to reduce the buildings environmental impact. This should include the employment of service providers with satisfactory environmental credentials. Operating an Maintenance guidelines/manuals should set out manufacturers details of installed plant, equipment and systems, detailed operating procedures to enable the efficient and correct operation of all systems, adequate design information to ensure that future modifications of enhancements can be carried out in full knowledge of the design principles so as to ensure that these modifications do not compromise original principles and degrade the efficient operation of the original systems, information and guidelines to facilitate the ongoing tuning and improvement so the operation of the systems over time or in response to changes in occupancy<br/>The EMP should be a MANAGEMENT focused device and should cover the following areas, establishment of a plan and demonstrated practices in each area should be required:</p> <ol style="list-style-type: none"> <li>1. Achievement of environmental targets</li> <li>2. Guidelines for new work including standards and the requirement to keep building records up to date, accurate and complete.</li> <li>3. Guidelines for Monitoring and Reporting</li> <li>4. Financial Management of issues associated with environmental impacts</li> <li>5. Management of supply issues associated with environmental impacts, both goods and services</li> <li>6. Guidelines for operation and maintenance</li> <li>7. Corporate leadership commitment</li> <li>8. Identification of improvement opportunities and a process to deliver continuous improvement</li> <li>9. Culture change, awareness and training focused on staff and occupants</li> </ol> |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

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| Ref No.      | Title  | Aim of Credit  | Credit Criteria Summary   | No. of Points Available | Comments   |
|--------------|--|--|---|-------------------------|--|
| <b>Man-5</b> | Owner & Tenant Commitment to Green Performance | To recognise the inclusion of lease clauses that align the interests of both the building owner and tenants and improve environmental performance of the base building and occupied space. | If greater than 3 points are achieved in Man-4, up to a further 2 points are awarded where tenancy lease agreements require occupants to participate in initiatives under the building owner/manager's Environmental Management Plan as per the following:<br>- 1 point for tenants who represent at least 10% of the NLA;<br>- 2 points for tenants who represent at least 20% of the NLA; | 2                       | In addition to "participating in base building initiatives" the following should also be considered / included.<br>1. The Design Guideline put forward in the commentary on Man-3 must be demonstrably applied and adhered to through a change management process requiring application for change and approval. It is likely that this arrangement would be best enshrined in the lease arrangements for tenants<br>2. This Operating Guideline put forward in the commentary on Man-3 should be demonstrably applied through a cooperative management process between the based building operator/owner and the tenants. This process would ideally also include for the regular reporting of energy efficiency information between tenant and base building |
|              |  |  | <b>Total Points =</b>   | <b>11</b>               |  |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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**3.2 Indoor Air Quality**

| Ref No. | Title             | Aim of Credit  | Credit Criteria Summary   | No. of Points Available | Comments  |
|---------|-------------------|--|---|-------------------------|---|
| IEQ-1   | Ventilation Rates | To recognise the provision of increased outside air rates, in order to promote a healthy indoor environment. | Up to 3 points are awarded if minimum outside air is provided at rates better than the requirements of AS1668.2-1991 or if natural ventilation is provided.<br>Mechanically ventilated buildings<br>1 point for 50% improvement on AS1668.2-1991<br>2 points for 100% improvement on AS1668.2-1991<br>3 points for 150% improvement on AS1668.2-1991<br>Naturally ventilated buildings<br>3 points if 90% of NLA is naturally ventilated in accordance with AS1668.2-2002<br>Mixed mode buildings<br>Both modes of operation must satisfy the relevant mechanical and natural ventilation criteria. The points awarded will be limited by the maximum points awarded under the mechanical ventilation criteria. | 3                       | The ability for an existing building to provide better than minimum outside air rates is usually significantly limited by HVAC design features, particularly in buildings that do not have outside air economy cycle systems.<br>In non economy cycle equipped buildings to change these features to allow larger minimum outside air rates (and the consequential required increase in spill air rates) is usually a very expensive exercise. In buildings that are already equipped with modulating outside air arrangements (outside air economy cycle) to change minimum OA rates is usually a significantly easier and cheaper exercise. As such it is likely that buildings in southern climes which are more likely to be equipped with outside air economy cycles are more likely to achieve this credit.<br>In buildings with and without economy cycle the ability to increase outside air rates may also be compromised by the capacity of thermal plant to deal with the increased rates of outside air to be heated or cooled.<br>It should also be noted that increasing minimum outside rates will have the effect of increasing energy consumption associated with heating and cooling. |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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| Ref No. | Title                    | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments   |
|---------|--------------------------|---|--|-------------------------|--|
| IEQ-2   | Air Change Effectiveness | To provide for effective delivery of clean air through reduced mixing with indoor pollutants to promote a healthy indoor environment. | <p>2 points are awarded where the ventilation effectiveness meets the following criteria for at least 90% of NLA:</p> <p><b>Mechanically Ventilated Buildings</b><br/>                     The ventilation systems are designed to achieve and Air Change Effectiveness (ACE) of &gt;0.95 when measured in accordance with ASHRAE F25-1997. Air change effectiveness is to be measured in the breathing zone (nominally 1m from finished floor level). Compliance with this criteria can be demonstrated via calculation or measurement. Measurements must be undertaken in accordance with ASHRAE F129-1997 on an empty floorplate.</p> <p><b>Naturally Ventilated Buildings</b><br/>                     Demonstrate a distribution and laminar flow pattern for at least 90% of each space in the direction of air flow for not less than 95% of standard hours of occupancy.</p> <p><b>Mixed Mode Buildings</b><br/>                     Both modes of operation must satisfy the relevant mechanical and natural ventilation criteria except naturally ventilated requirement requires demonstration for at least 95% hours of occupancy.</p> | 2                       | <p><b>Mechanically Ventilated Buildings</b><br/>                     It should be noted that many existing buildings are unable to achieve this level of ventilation effectiveness because of HVAC design features that are not able to be changes without major if not total system redesign.</p> |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title                                 | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments   |
|---------|---------------------------------------|---|--|-------------------------|--|
| IEQ-3   | Carbon Dioxide Monitoring and Control | To provide monitoring and feedback of carbon dioxide levels to ensure delivery of minimum outside air requirements. | 1 point is awarded where a Carbon Dioxide monitoring system is provided that facilitates continuous monitoring and adjustment of outside air ventilation rates to at least 95% of the NLA OR where buildings are fully naturally ventilated and ventilation rates are controlled by occupants OR where systems provide 100% outside air with no recirculated component.  | 1                       | Should some reference be made to the need to have the CO2 checked at least annually by a NATA certified agency or equivalent. These types of systems can and do drift over time and are often not commissioned over a reasonable period of time and are often not ever checked again post commissioning.   |
| IEQ-4   | Daylighting                           | To improve the level of daylighting for building users.   | Up to 3 points are awarded for % of NLA that has a daylight factor not less than 2% at the working plane under a standard overcast design sky:<br>1 point = 30% of NLA<br>2 points = 60% of NLA<br>3 points = 90% of NLA<br>The area of the working plane subject to direct sunlight penetration is to be excluded from the area achieving the required daylight factor. | 3                       | The owners, operators and tenants of most existing buildings will not be able to materially affect the amount of daylight that is achieved at the working plane due to the floor plate design, floor to widow ratios, glazing attributes etc. Whilst this will reward well designed buildings as they move into post occupancy it will probably have little take up in older albeit well managed buildings |
| IEQ-5   | Daylight Glare Control                | To reduce the level of glare in the workplace arising from natural light.   | 1 point is awarded where occupant controlled, base building owned, permanent internal or external blinds/screens are fitted as a base building commitment to reduce glare associated with natural lighting.  | 1                       | This has very limited application in the majority of existing buildings a retrofit given that many existing buildings do not have high levels of natural lighting and associated glare problems.   |
| IEQ-6   | High Frequency Ballasts               | To increase workplace amenity by avoiding low frequency flicker that may be associated with fluorescent lighting.   | 1 point is awarded where high frequency ballasts are installed in fluorescent luminaires over a minimum of 95% of NLA.   | 1                       | These changes can be retrofitted and credit should be awarded accordingly although circumstances in some building mean that their take up will not be practical. It should also be noted that in many tenancies lighting systems may not be base building systems.   |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title                      | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments  |
|---------|----------------------------|---|--|-------------------------|---|
| IEQ-7   | Electric Lighting Levels   | To ensure that base building lighting is not over-designed.   | 1 point is awarded where office lighting has a maintained adequate illuminance level of no more than 400 lux for 95% of NLA as measured at the working plane without additional daylight. Compliance may be demonstrated via calculation or measurement.   | 1                       | Good, however should also extend to lesser light levels in services areas.  |
| IEQ-8   | External views             | To reduce eye-strain for building occupants by allowing long distance views and to provide visual connectivity to outdoors. | Up to 2 points are awarded for the % of NLA which has a direct line of sight through vision glazing (either externally or to an adequately sized and daylight internal atrium). The distance to the nearest vision glazing to be no more than 8m.<br>1 point = 60% of NLA<br>2 points = 90% of NLA   | 2                       | The owners, operators and tenants of most existing buildings will not be able to materially affect the amount of direct line of sight other than through fit out changes, layout partition design etc   |
| IEQ-9   | Individual Comfort Control | To recognise the benefits of individual comfort control to provide good thermal comfort.                                    | Up to 2 points are awarded where % of NLA is designed to allow for individual user control of air supply rates to each workspace. For mechanically ventilated buildings the base building HVAC system is designed to allow for tenant installation of individual user control of air supply rates to each workspace. For naturally ventilated buildings then individual user control over ventilation openings must be provided. For mixed mode buildings then both criteria apply.<br>1 point = 60% of NLA<br>2 points = 90% of NLA | 2                       | <p>It should be noted that the great majority of existing buildings are unable to achieve this level of ventilation control because of HVAC design features. Whilst this will reward buildings designed with this feature as they move into post occupancy it will have very little take up in older albeit well managed buildings.</p> <p>It should also be noted that in buildings where this level of personal adjustment is available the systems are expensive and overly complex to install. They are also typically difficult and costly to commission correctly and to maintain correctly over their life. This can lead to less effective systems, prone to occupant complaint and decreasing levels of energy efficiency.</p> |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title           | Aim of Credit   | Credit Criteria Summary   | No. of Points Available | Comments  |
|---------|-----------------|---|---|-------------------------|---|
| IEQ-10  | Asbestos        | To reduce health risks to occupants from the presence of hazardous materials.                             | 1 point is awarded for buildings where an asbestos survey has been carried out and all asbestos has been appropriately removed and disposed of as defined by the relevant environmental and OH&S legislation.   | 1                       | <p>What is appropriate in terms of extent of removal, legislation doesn't adequately define this in all circumstances.</p> <p>Often asbestos is identified throughout a building and the material to is or risk to occupants or maintainers is removed and other material that is encapsulated or of little or no risk is left in situ appropriately labelled and documented This is also often the material that is very difficult or expensive to remove. Do you disadvantage organisations that have done all reasonably possible to minimise or eliminate the risk but not removed all asbestos?</p>  |
| IEQ -11 | Thermal Comfort | To ensure that occupants are comfortable and that temperatures are within energy minimisation guidelines. | Up to 2 points are awarded where assessments have been made of thermal comfort levels at design stage and used to evaluate appropriate servicing options. The following PMV levels, calculated in accordance with ISO7730 (or equivalent using Draft ASHRAE Comfort Standard 55 & "Developing an adaptive model of thermal comfort and preference - final report on ASHRAE RP884"), must be designed to be achieved during Standard Hours of Occupancy for 98% of the year: 1 point = PMV levels are between -1 and +12 points = PMV levels are between -0.5 and 0.5 Compliance with this point may be demonstrated via modelling or the "deemed to comply" method as outlined in the Technical Manual. | 2                       | <p>This is a design credit and there is not direct linkage between a certain level of PMV and particular servicing/ maintenance options</p> <p>This will be a credit that will be very hard to judge and assign.</p> <p>In a design sense it is also something that is very difficult to devolute down from a design objective to a brief to a design to an as built circumstance and then measure it to see if Brief was fulfilled. Modelling can be used to demonstrate anything, and the deemed to satisfy route provides some indication as to where this credit should go for definition. i.e. It should be related to demonstrating adequate and appropriate levels of regular maintenance, inspection and checking particularly of the controls systems, logging of internal conditions, occupant complaints and occupant satisfaction surveying (annual sample approach).</p> |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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| Ref No. | Title                 | Aim of Credit   | Credit Criteria Summary   | No. of Points Available | Comments   |
|---------|-----------------------|---|---|-------------------------|--|
| IEQ-12  | Internal Noise Levels | To ensure that internal noise levels are maintained at an appropriate level.      | Up to 2 points are awarded where the building design can be shown to achieve the ambient internal noise levels in 95% of NLA in accordance with AS/NZS 2107:2000 as follows:<br>Building Services Design<br>1 point where the design of building services contributes no more than 5dB to space noise levels (as defined in AS/NZS 2107:2000 Appendix B). Compliance may be demonstrated via calculation or measurement.<br>Overall Building<br>1 point for design sound level between 40-45 dB LAeqT in general offices areas and 35-40dB LAeqT in private offices to be confirmed.  | 2                       | Noise levels can be improved as a retrofit and credit should be awarded accordingly where a problem is rectified. It should also be noted that in many tenancies noise problems emanate from tenant installed and responsible systems not base building systems.   |
| IEQ-13  | Indoor Air Pollutants | To reduce the detrimental impact on occupant health from internal air pollutants. | For materials installed in the base building during the previous 12 months (2 years for carpet), up to 4 points are awarded, one for each of the following achieved:<br>- 95% of all painted surfaces are low-VOC paints OR no painting was undertaken,<br>- All carpet systems are low-VOC OR no carpet installed ;<br>- All adhesives and sealants are low-VOC or no adhesives/sealants used;<br>- All composite wood product is low emission formaldehyde OR no composite wood product used.<br>If the building has been previously certified under Green Star Office Asset the above criteria apply for the entire period between certifications. | 4                       | This is in effect a design credit. What would be appropriate would be to award a credit for organisations that have a base building fit out guide and demonstrable management approach that ensures low VOC etc solutions are applied whenever finishes and floor coverings and furniture is replaced as part of normal wear and tear works and minor fit out works. |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No.               | Title                 | Aim of Credit  | Credit Criteria Summary  | No. of Points Available | Comments   |
|-----------------------|-----------------------|--|--|-------------------------|--|
| IEQ-14                | Tenants Exhaust Riser | To reduce the detrimental impact on occupant health from operational sources of internal air pollutants. | 1 point is awarded where a dedicated tenants' exhaust riser able to provide no less than 0.2L/s/m2 for 100% of NLA of whole building and with capacity of 0.5L/s/m2 for 100% NLA on any individual floor AND a requirement that all tenancy printing/photocopying rooms areas are externally exhausted.                                    | 1                       | This is unclear in its description. The dedicated riser is a design credit, not an existing building credit.<br><br>Credit should be due to organisations that demonstrably recognise the sources of internal pollutants such as photocopiers and printers and locate these devices with adequate exhaust to atmosphere. This should be demonstrated by both the existence of written guidelines for the purchase (low emission where possible) and management of these devices and by the actual application of these guidelines            |
| IEQ-15                | Mould Prevention      | To reduce the risk of mould growth and the associated detrimental impact on occupant health.             | 1 point is awarded where, to reduce the risk of mould growth, the mechanical ventilation system is designed to actively control humidity to be no more than 60% Relative Humidity in the office space and no more than 80% Relative Humidity in the supply ductwork OR the building is fully naturally ventilated and complies with AS1668 | 1                       | In some parts of Australia this is non sensical as the combination of ambient humidity and typically air conditioning system design features can virtual eliminate any possibility of excessive humidity in the office space.<br>It should be noted that with design solutions for controlling humidity result in operational energy penalties.<br>It should also be noted that the retrofit of controls or changes to air conditioning plant to specifically control humidity may be impractical or very costly in many existing buildings. |
| <b>Total Points =</b> |                       |  |  | <b>27</b>               |  |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

### 3.3 Energy

| Ref No. | Title              | Aim of Credit  | Credit Criteria Summary   | No. of Points Available | Comments  |
|---------|--------------------|--|---|-------------------------|---|
| Ene-1   | Energy             | To establish a minimum requirement for operational energy efficiency and greenhouse emissions of the base building.  | <p>It is a conditional requirement that the base building <b>design</b> achieves a minimum predicted rating of 4 stars using the Australian Building Greenhouse Rating (ABGR) scheme, if practical completion of the building was after 31 Dec 2003 (launch of Green Star Office Design). "na" will automatically appear if the "Building Input" sheet indicates the project is less than two years old at the of expected certification under Green Star Office Asset.</p> <p>Note that this does not require a formal ABGR commitment agreement to be signed. On-site generated renewable energy can be included in the calculation.</p>  | N/A                     | <p>This is written as a design credit. Most existing buildings, no matter how well operated and no matter to what extent economical rational energy saving investments are made in technology and systems are made will not achieve a 4 star ABGR Rating. This will very significantly limit the number of well run and energy efficient buildings that will be eligible for rating. This will effectively leave the great majority of existing buildings, even the majority of premium and A graded buildings without an industry based environment rating tool.</p> |
| Ene-2   | Energy Improvement | To recognise and encourage buildings that contain features that help to minimise operational energy consumption and greenhouse emissions of the base building over and above the conditional requirement in Ene-1. | <p>Up to 15 points are awarded based on the design (or corrected operational*) improvements in energy efficiency and greenhouse emissions as follows:</p> <p>1 points = 3.5 stars<br/>           2 points = 4 stars<br/>           3 points = 4.5 stars<br/>           6 points = 5 stars<br/>           9 points = 5 stars + 20% CO2 reduction or better<br/>           12 points = 5 stars + 40% CO2 reduction or better<br/>           15 points = 5 stars + 60% CO2 reduction or better</p> <p>If car parking has been included in the ABGR assessment then the points achieved can be increased as follows:<br/>           - add 1 point if at least 1 car parking space provided for each 200m2 of NLA<br/>           - add 2 points if at least 1 car parking space provided for each 100m2 of NLA</p> | 15                      | <p>It is not clear how this relates to Ene -1 for existing buildings. Ideally the energy provisions in the Rating tool would reward buildings that had made and maintained improvements in energy efficiency along with their absolute energy efficiency to be the best they can be. I.e. a graded number of credits relating to the absolute energy efficiency achieved and a credit award for achieving the best the building is capable of within a set of guidelines.</p>   |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title                         | Aim of Credit   | Credit Criteria Summary   | No. of Points Available | Comments  |
|---------|-------------------------------|---|---|-------------------------|---|
| Ene-3   | Electrical Sub-metering       | To recognise and encourage the provision of energy sub-metering to facilitate energy monitoring of base building services.                  | 1 point is awarded where sub metering is provided for substantive energy uses within the building (greater than 100kVA).<br><br>A further point is awarded if the main and sub- meters are linked to a BMS or monitoring system               | 2                       | This credit should only be achieved where it is demonstrated that the sub metering information is actually recorded and then related to other building variables, NLA, hours of operation, occupancy etc to produce energy efficiency indices that can be reported and used to track change. The management aspects of sub metering could also be specifically included in say the Man-4 description, however it does need to be specifically captured otherwise the requirement for sub metering is non sensical. If you cant prove you are doing something with the information why have a credit for metering? |
| Ene-4   | Tenancy Sub-metering          | To recognise and encourage the provision of energy sub-metering to facilitate energy monitoring by tenant or end user.                      | 1 point is awarded where sub metering is provided for lighting and small power for each floor and tenancy.  | 1                       | Comment as for Ene-3  |
| Ene-5   | Office Lighting Power Density | To recognise and encourage lighting design practices that lessen lighting energy consumption while maintaining appropriate lighting levels. | Up to 4 points are awarded where lighting power densities for 95% of NLA meets the following criteria:<br>1 point = 3 W/m2 per 100 lux<br>2 points = 2.5 W/m2 per 100 lux<br>3 points = 2 W/m2 per 100 lux<br>4 points = 1.5 W/m2 per 100 lux | 4                       | This is put forward to "encourage lighting design practices", its greatest power will be to encourage the reconsideration of as built lighting provision and the resultant luminare relocation and de lamping to reduce W/m2 to achieve the required illumination levels. Perhaps the language needs to be changed to reflect this? It should also be noted that in many tenancies lighting systems may not be base building systems.   |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title                        | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments   |
|---------|------------------------------|---|--|-------------------------|--|
| Ene-6   | Office Lighting Zoning       | To recognise and encourage lighting design practices that offer greater flexibility for light switching, making it easier to light only occupied areas. | <p>Upto 3 points are awarded 1 point is awarded where:</p> <ul style="list-style-type: none"> <li>- all individual or enclosed spaces have individual switches</li> <li>- the size of individually switched lighting zones does not exceed 100m2 for 95% of NLA</li> <li>- switching is clearly labelled and easily accessible by building occupants</li> </ul> <p>An additional point is available where the above is achieved and the system has been designed to allow for all office space lighting to be switched off automatically after hours and/or is provided via a timer switch.</p> <p>1 point is awarded where lights adjacent to windows are zoned separately and are linked to daylight sensors. This point can only be achieved if at least 1 point was achieved in IEQ 4.</p> | 3                       | <p>This is put forward to “encourage lighting design practices”, its greatest power will be to encourage the reconsideration of as built lighting switching provision against actual building occupancy patterns and the resultant re switching, labelling and education of staff to minimise the operating time of luminaries. Perhaps the language needs to be changed to reflect this? It should also be noted that in many tenancies lighting systems may not be base building systems.</p>  |
| Ene-7   | Peak Energy Demand Reduction | To reduce peak demand on energy supply infrastructure.  | <p>2 points are awarded where energy demand reduction systems are installed to reduce peak demand on electricity infrastructure by 25%. Reduction shall be measured against base building peak energy demand calculated without the benefit of the installed reduction systems. This may be achieved by on-site generation or by thermal/energy storage systems but not by load lopping using the BMS.</p>   | 2                       | <p>On site electricity generation taken in isolation has deleterious environmental effects with consumption of fossil fuel and the discharge of emissions to atmosphere (gases and noise plus waste oil at service). Thermal/ energy storage systems also have deleterious environmental effects in that they require materials to construct and maintenance to operate. On site electricity generation as part of a Combined Heat and Power (CHP) or cogeneration system may have a net positive effect in lessening the environmental impact of the facility. Sites with this type of installation should be recognised. Why is in house demand reduction by load lopping using the BAS not allowed? There is latitude in many buildings to be clever about when to start and stop systems without degrading the internal conditions of the building. Optimised start time systems and even night purge are both arguably demand reduction strategies that reduce the typical air conditioning start up demand at the morning peak period.</p> |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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| Ref No.               | Title          | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments   |
|-----------------------|----------------|---|--|-------------------------|------------|
| Ene-8                 | Carbon Credits | To acknowledge initiatives that reduce the greenhouse gas emissions of the base building. | 1 point is awarded where the building owner has been awarded a NSW Greenhouse Abatement Certificate (NGAC) for a greenhouse gas emission reduction of greater than 5kg CO2e/m2/year. This certificate must be valid at the time of the buildings Green Star assessment.<br>This credit currently applies only to NSW. "na" will automatically appear if the "building Input" sheet indicates the project is located outside NSW. | 1                       | No comment |
| <b>Total Points =</b> |                |   |  | <b>28</b>               |            |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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**3.4 Transport**

| Ref No.      | Title                | Aim of Credit   | Credit Criteria Summary   | No. of Points Available | Comments  |
|--------------|----------------------|---|---|-------------------------|---|
| <b>Tra-1</b> | Car Parking          | To encourage commuters to utilise alternative modes of transport by limiting available car park spaces. | Up to 2 points are awarded where car parking spaces provided on the site are less than the maximum local planning allowances.<br>1 point = at least 25% less than the maximum local planning allowances, or within 10% of the minimum local planning allowances if only a minimum is stipulated.<br>2 points = at least 50% less than the maximum local planning allowances, or no more than the minimum local planning allowances if only a minimum is stipulated.<br>Where car parking is not permitted in the planning scheme type "na" in the points achieved column. | 2                       | These changes can be retrofitted and credit should be awarded accordingly although circumstances in some buildings mean that their take up will not be practical. |
| <b>Tra-2</b> | Small Parking Spaces | To encourage use of smaller, more fuel efficient, vehicles for work commuting.                          | 1 point is awarded where 25% of the total car parking spaces on the site are designed and labelled for small cars (2.3m wide x 5.0m long) and/or mopeds/motorbikes. A minimum of 10% of the total parking spaces (ie. 10 out of every 100 parking spaces provided) must be for small cars.<br>If no car parking provided on site type "na" in the points achieved column.   | 1                       | These changes can be retrofitted and credit should be awarded accordingly although circumstances in some buildings mean that their take up will not be practical. |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No.               | Title              | Aim of Credit  | Credit Criteria Summary  | No. of Points Available | Comments  |
|-----------------------|--------------------|--|--|-------------------------|---|
| <b>Tra-3</b>          | Cyclist Facilities | To encourage building occupants and visitors to cycle and avoid unnecessary car use by ensuring adequate cyclist facilities are provided onsite. | <p>Up to 3 points are awarded as follows:</p> <p>1 point is awarded where there is adequate provision of cycling facilities:</p> <ul style="list-style-type: none"> <li>- secure storage for 5% of building staff (based on 1 person per 15m<sup>2</sup> of NLA)</li> <li>- plus accessible showers (1 per 10 bicycle spaces provided or part thereof)</li> <li>- plus changing facilities (with secure lockers or equivalent – 1 for each bicycle space).</li> </ul> <p>2 points are awarded where there is good provision of cycling facilities:</p> <ul style="list-style-type: none"> <li>- secure storage for 10% of building staff (based on 1 person per 15m<sup>2</sup> of NLA)</li> <li>- plus accessible showers (1 per 10 bicycle spaces provided or part thereof)</li> <li>- plus changing facilities (with secure lockers or equivalent – 1 for each bicycle space)</li> </ul> <p>An additional point is awarded if either of the points are achieved above AND visitor bicycle parking is provided near the front entrance to the building that meets the following criteria:</p> <ul style="list-style-type: none"> <li>- 1 space per 7,500m<sup>2</sup> NLA or part thereof</li> <li>- secure, signposted spaces with good natural surveillance and weather protection.</li> </ul> | 3                       | These feature can usually be retrofitted and credit should be awarded accordingly   |
| <b>Tra-4</b>          | Public Transport   | To reward those buildings that are within close proximity of and have good access to public transport networks with frequent services.           | <p>Up to 5 points are awarded based on the proximity of the building to public transport, the number of routes served, and the average frequency of service during a two hour peak morning and a two hour peak afternoon weekday commuting period.</p> <p>The points are determined using the Public Transport Credit Calculator.</p>  | 5                       | This is in effect a planning credit, not a discretionary option for an existing building which cannot move nor in any material way typically affect the allocation of public transport services. What about recognising buildings that demonstrably make their occupants aware of the various public transport options through building tenancy guides. |
| <b>Total Points =</b> |                    |  |  | <b>11</b>               |   |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

### 3.5 Water

| Ref No.      | Title                                     | Aim of Credit   | Credit Criteria Summary   | No. of Points Available | Comments  |
|--------------|---|---|---|-------------------------|---|
| <b>Wat-1</b> | Occupant Amenity Potable Water Efficiency | To reduce potable water consumption by building occupants.          | Up to 5 points are awarded on the basis of the predicted potable water consumption for sanitary use within the building.<br>This is determined using the Potable Water Credit Calculator. The points are based on type and water rating of fixtures/fittings less any reduction in potable water use through greywater, blackwater or rainwater collection systems.   | 5                       | Water efficiency improvement changes can be retrofitted and credit should be awarded accordingly  |
| <b>Wat-2</b> | Water Metering                            | To ensure water systems are capable of being monitored and managed. | Up to 2 points are awarded:<br>1 point is awarded where water sub-meters are installed on all major water uses in the building and includes as a minimum cooling towers (where installed), irrigation & washdown (where installed) all retail tenancies and hot water services.<br>A further point is awarded if the main and sub-water meters are linked to a BMS or monitoring system to provide a leak detection system. | 2                       | This credit should only be achieved where it is demonstrated that the sub metering information is actually recorded and then related to other building variables, NLA, hours of operation, occupancy etc to produce water efficiency indices that can be reported and used to track change. The management aspects of water sub metering could also be specifically included in say the Man-4 description, however it does need to be specifically captured otherwise the requirement for sub metering is non sensical. If you can't prove you are doing something with the information why have a credit for metering? |
| <b>Wat-3</b> | Landscape Irrigation Water Efficiency     | To reduce potable water consumption for landscape irrigation.       | 1 point is awarded where 90% of the water requirement for landscape irrigation is sourced from onsite rainwater collection or recycled site water OR a water efficient irrigation system comprising subsoil drip systems and automatic timers with rainwater or soil moisture sensor control override is installed.<br>If there is no landscaping or irrigation systems installed type "na" in the points achieved column.  | 1                       | These can be retrofitted and credit should be awarded accordingly   |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

| Ref No.               | Title                           | Aim of Credit  | Credit Criteria Summary   | No. of Points Available | Comments  |
|-----------------------|---------------------------------|--|---|-------------------------|---|
| <b>Wat-4</b>          | Cooling Tower Water Consumption | To reduce potable water consumption due to water-based cooling systems   | Up to 4 points are awarded where building potable water consumption is reduced through efficient use of, or avoidance of evaporative or water cooling tower systems:<br>- 2 points if the cooling tower water treatment is designed to achieve 6 or better Cycles of Concentration<br>OR the natural ventilation mode of a mixed mode system reduces the HVAC cooling water consumption by at least 50%.<br>- 4 points if no cooling towers or evaporative cooling is provided OR where cooling systems use 90% non-potable water | 4                       | Cooling tower water usage in existing buildings needs much better management. This credit should encourage the establishment and demonstrated application of a water management plan for each cooling tower system that addresses, water make up, bleed off,, wastage identification and rectification, thermal performance/ operation / maintenance and cleaning / wash down methods and record keeping, and monitoring and metering of water flow in and out of the system. Specifying cycles of concentration only addresses part of the issues.<br>It should be noted that in some circumstances the replacement of cooling tower based systems with air cooled plant is not practical or possible. And in other circumstances air cooled equipment has a energy consumption and energy demand (significant) and noise emission penalty compared with a cooling tower solution. Air cooled plant will often require the provision of significant additional electrical supply infrastructure compared to cooling tower solutions and this will have a deleterious environmental impact. |
| <b>Wat-5</b>          | Fire System Water Consumption.  | To reduce potable water consumption due to testing, cleaning and maintenance of the building's fire sprinkler systems. | 1 point is awarded where there is sufficient storage for hydrant test water and drain-downs to be reused onsite.  | 1                       | This also relates back to system design and the ability to drain down only part of the system for not only testing etc but for the inevitable modifications to the system.<br>There are "environmentally conscious" buildings being constructed that still require the whole system to be drained to allow minor modifications to sprinkler head locations. In some situations floor by floor drain down provisions can be retrofitted.<br>As such there are other environmental fire provisions that could be identified and recognised with credit(s).  |
| <b>Total Points =</b> |                                 |  |   | <b>13</b>               |   |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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**3.6 Materials**

| Ref No.               | Title                   | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments  |
|-----------------------|-------------------------|---|--|-------------------------|---|
| <b>Mat-1</b>          | Recycling Waste Storage | To facilitate the recycling of resources used within offices to reduce waste going to landfill. | 2 points are awarded where a dedicated storage area is provided for the separation, collection and recycling of office consumables with good access for all building occupants and for collection by recycling companies. The storage area shall be adequately sized (refer Technical Manual) to allow for recycling of, as a minimum, paper, glass, plastics, metals and organic (compostible) materials. | 2                       | This provision can be retrofitted and credit should be awarded accordingly however in some circumstances it is not physically possible to include these provisions in existing buildings. |
| <b>Total Points =</b> |                         |   |  | <b>2</b>                |   |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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**3.7 Ecology**

| Ref No.               | Title                       | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments  |
|-----------------------|-----------------------------|---|--|-------------------------|---|
| Eco-1                 | Reclaimed Contaminated Land | To encourage the identification and disclosure of contaminated land.                                | 2 credit are awarded where a contaminated land assessment has been undertaken and this information is readily available to the public. This land assessment must be representative of the site at the time of the Green Star assessment.   | 2                       | This is a planning credit, not an existing building issue. For an existing building where pollution / contamination was a possibility it would be better to reward the existence of an environmental pollution management plan and the associated awareness and training required to assure that it would be enacted if there was a problem |
| Eco-2                 | In-Ground Storage Tanks     | To encourage the removal of in-ground storage tanks.  | 2 credits are awarded where the site contains no in-ground dangerous goods storage tanks.<br>Or<br>Where tank(s) have been decommissioned and remediated in accordance with Green Star - Office Asset Technical Manual to prevent leaching of contaminants to the surrounding environment  | 2                       | Many existing sites will not have in ground tanks   |
| Eco-3                 | Change of Ecological Value  | To minimise the ecological impact of the site and maximise the enhancement of its ecological value. | Up to 4 points are awarded where the ecological value of the site is greater than the benchmark of 65% building or impermeable concrete and 35% native garden. No points are available for sites which contain rare, threatened or vulnerable flora and fauna.<br><br>The points are calculated using the Change in Ecology Credit Calculator which compares the relative ecological value of land use before and after development. | 4                       | This is basically a design or planning credit. There is limited or no opportunity to change the ecological value of many existing buildings and sites however where this is possible it should be recognised.   |
| <b>Total Points =</b> |                             |   |  | <b>8</b>                |   |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

### 3.8 Emissions

| Ref No. | Title                      | Aim of Credit   | Credit Criteria Summary   | No. of Points Available | Comments  |
|---------|----------------------------|---|---|-------------------------|---|
| Emi-1   | Refrigerant ODP            | To reduce the potential for long-term damage to the stratospheric ozone layer through the accidental release of ozone-depleting substances to the atmosphere.   | Up to 2 points are awarded where HVAC refrigerants in use have an Ozone Depletion Potential (ODP) of zero OR where there are no refrigerants present.<br><br>1 point = 95% of all refrigerants by volume have an ODP of zero<br>2 points = 100% of all refrigerants by volume have an ODP of zero OR where no refrigerants are used   | 2                       | These can be retrofitted and credit should be awarded accordingly |
| Emi-2   | Refrigerant GWP            | To reduce the potential for increased global warming arising from the emission of refrigerants to the atmosphere in the event of accidental release of intensive greenhouse gasses to the atmosphere. | 1 point is awarded where all refrigerants have a Global Warming Potential (GWP) of below 10 OR where no refrigerants are used.  | 1                       | These can be retrofitted and credit should be awarded accordingly |
| Emi-3   | Refrigerant Leak Detection | To reduce the emissions of refrigerants to the atmosphere arising from leakages in the building's cooling plant.  | 1 point is awarded where systems containing refrigerants are contained in a moderately air tight enclosure and where a refrigerant leak detection system is specified/installed covering high-risk parts of the plant (evaporator or condenser coils can be omitted from this) OR where no refrigerants are used.<br>This point is not applicable (type "na" in the points achieved score) if all points in Emi-1 and Emi-2 are achieved. | 1                       | These can be retrofitted and credit should be awarded accordingly |

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

| Ref No. | Title                 | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments   |
|---------|-----------------------|---|--|-------------------------|--|
| Emi-4   | Refrigerant Recovery  | To reduce and prevent unnecessary loss of refrigerants in the event of a leak.                                      | 1 point is awarded where either provision of automatic refrigerant pump down is made to the heat exchanger (or dedicated storage tanks) with isolation valves OR where no refrigerants are used. This point is not applicable (type "na" in the points achieved score) if all points in Emi-1 and Emi-2 are achieved.  | 1                       | These can be retrofitted and credit should be awarded accordingly                          |
| Emi-5   | Watercourse Pollution | To reduce the potential of pollution in water running off from buildings and hard surfaces to natural watercourses. | 1 point is awarded where all stormwater leaving the site, at any time upto a 1 in 20 year storm event, is treated /filtered in accordance with either:<br>- Victorian EPA Best Practice Guidelines for Environmental Management for Urban Stormwater, OR<br>- Australian and New Zealand Environment Conservation Council (ANZECC)'s Guidelines for Urban Stormwater Management. | 1                       | These can be retrofitted and credit should be awarded accordingly. See comments on Eco - 1 |
| Emi-6   | Reduced flow to sewer | To reduce water flows to municipal sewerage systems requiring treatment.  | Up to 4 points are awarded based on the predicted outflows to the sewage system due to building occupants useage. The points are determined using the Sewerage Credit Calculator and are based on the water efficiency of the fixtures/fittings less any reduction of flow to sewer through use of greywater or blackwater treatment / recycling systems.                        | 4                       | These can be retrofitted and credit should be awarded accordingly                          |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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| Ref No.               | Title                   | Aim of Credit   | Credit Criteria Summary  | No. of Points Available | Comments  |
|-----------------------|-------------------------|---|--|-------------------------|---|
| Emi-7                 | Light pollution         | To reduce pollution from the unnecessary dispersion of light into the night sky and onto neighbouring property. | 1 point is awarded where no direct beam light is directed beyond the site boundaries or upwards without falling directly on a surface with the explicit purpose of illuminating that surface. The installation shall comply with AS4282 "Control of the obtrusive effects of outdoor lighting" | 1                       | These can be retrofitted and credit should be awarded accordingly   |
| Emi-8                 | Cooling Towers          | To reduce the risk of Legionellosis from cooling towers.  | 1 point is awarded where there are no cooling towers serving the building.   | 1                       | These can be retrofitted and credit should be awarded. It should be noted that in some circumstances the replacement of cooling tower based systems with air cooled plant is not practical or possible. And in other circumstance air cooled equipment has a energy consumption and energy demand (significant) and noise emission penalty compared with a cooling tower solution. Air cooled plant will often require the provision of significant additional electrical supply infrastructure compared to cooling tower solutions and this will have a deleterious environmental impact.. |
| Emi-9                 | Cooling Tower Discharge | To eliminate the risk of contamination of stormwater from cooling tower water discharge.                        | 1 point is awarded where the all all cooling tower water discharges are not piped directly to stormwater. This point is not applicable if there are no cooling towers on site.   | 1                       | It is a legal requirement in most if not all Australian jurisdictions - that all liquid discharges from cooling towers flow into the sewer and are prohibited from flowing into the storm water system. As such this credit is non sensical.  |
| <b>Total Points =</b> |                         |   |  | <b>13</b>               |   |

Green Star Office Asset PILOT  
**Stakeholder Review and Comment Submission**

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**3.9 Innovation**

| Ref No.               | Title      | Aim of Innovation  | Innovation Criteria Summary  | No. of Points Available | Comments  |
|-----------------------|------------|--|--|-------------------------|---|
| Inn-1                 | Innovation | To encourage the spread of innovative technologies, designs, and processes for commercial building applications that impact environmental performance. | <p>Up to 5 innovation points are awarded at the discretion of the GBCA following a considered assessment by the GBC Technical Committee against the following criteria:</p> <ol style="list-style-type: none"> <li>1. Is it innovative? - would it qualify for AusIndustry R&amp;D tax concessions?</li> <li>2. What is the actual environmental benefit of the innovation?</li> <li>3. How many credits has the innovation achieved already during the credit assessment?</li> </ol> <p>Refer to Technical Manual for further guidance on Innovation assessment criteria.</p> | 5                       | This is applicable to existing buildings and should be encouraged. It should also be extended to demonstrated innovative management approaches and not limited to the implementation of technology or its eligibility for R&D tax concessions |
| <b>Total Points =</b> |            |  |  | <b>5</b>                |   |

# Green Star Office Asset PILOT

## Stakeholder Review and Comment Submission

### 3.10 Building Input

| Green Star - Office Asset PILOT  |     |
|--|-----|
| <b>Pre-Assessment Tool</b>   |     |
| Name of Building:  |     |
| Address of Building:   |     |
| Postcode:  |     |
| State:   | NSW |
| Date of Construction* (dd/mm/yyyy):  |     |
| Expected Date of Certification (dd/mm/yyyy):   |     |
| Building Owner:  |     |
| Contact Person:  |     |
| Green Star Accredited Professional:  |     |
| Registration No.:  |     |
| Building Manager:  |     |
| Architect:   |     |
| Structural/Civil Engineer:   |     |
| Building Services Engineer:  |     |
| Quantity Surveyor:   |     |
| Acoustic Consultant:   |     |
| Landscaping Consultant:  |     |
| Building Surveyor:   |     |
| Main Contractor:   |     |
| Local Planning Authority:  |     |
| Net Lettable Area (NLA) in m <sup>2</sup> :  |     |
| No. of Storeys:  |     |
| % of Commercial Office Space:  |     |
| Building Description:<br>(Orientation, form, structure, façade, etc)                       |     |
| Building Services:<br>(Heating, Cooling, Ventilation, Lighting, Lifts, Domestic Hot Water) |     |
| Date of Pre-assessment:  |     |

Additional information relevant to existing buildings and their operation could and should be captured in this sheet including:

- Building or Facility Manager
- Principle Tenants and Tenant Area
- Building Maintenance Providers
  - Mechanical and HVAC
  - Electrical and Lighting
  - Fire and Life Safety
- Whether the building includes a car park
- Whether the building includes any high energy use area like data processing or computer suites, or commercial kitchens, total NLA
- Whether the building includes any retail tenancies, total NLA
- Date of last major refurbishment (if any) that included works to central plant, or base building services or façade.

Information relating to the following is probably not relevant in an existing building rating process unless it is to be related back to a Green Star design rating for the building.

- Architect:
- Structural/Civil Engineer:
- Building Services Engineer:
- Quantity Surveyor:
- Acoustic Consultant:
- Landscaping Consultant:
- Building Surveyor:
- Main Contractor:

## Green Star Office Asset PILOT Stakeholder Review and Comment Submission

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### 3.11 Available Credits and Weighting

The weighting analysis shown below in the table has been derived from the Graphical Summary in the Green Star Office Asset Pilot Microsoft Excel document.

There appears to be a significantly higher weighting towards management credits which appropriately reflects the prominence that this aspect in existing building has in achieving favourable environmental outcomes.

There also appears to be a higher effective weighting towards Materials credits. The credits in this area should be able to be accessed through retrofit or change in existing buildings, as such a higher weighting as currently applied is appropriate.

Credits in the areas of Indoor Air Quality, Land Use and Ecology and Emissions appear to be lowly weighted. In reviewing the activities and attributes that attract credits in these areas and the typical ability of an existing building to be improved in these areas the following comments are offered:

- Indoor Air Quality – the majority of credits in this area will be difficult to access through retrofit or change in existing buildings, as such a lower weighting as is currently proposed is likely to be appropriate.
- Land Use & Ecology - the credits in this area are virtually impossible to access in the majority of existing buildings through retrofit or change, as such a lower weighting as is currently proposed is likely to be appropriate
- Emissions - the majority of credits in this area should be able to be accessed through retrofit or change in existing buildings, as such a **higher** weighting than currently proposed may be appropriate. It is understood that if a higher weighing is applied in this area other weightings would need to decrease commensurately. It is suggested that the weighting that appears to be on the management aspects could be decreased slightly.

|                                   | Points Available | Weighted Category Score | Effective Weighting Factor |
|-----------------------------------|------------------|-------------------------|----------------------------|
| <b>Management</b>                 | 11               | 21                      | 215.73%                    |
| <b>Indoor Environment Quality</b> | 27               | 20                      | 83.70%                     |
| <b>Energy</b>                     | 28               | 25                      | 100.89%                    |
| <b>Transport</b>                  | 11               | 10                      | 102.73%                    |
| <b>Water</b>                      | 13               | 12                      | 104.31%                    |
| <b>Materials</b>                  | 2                | 2                       | 113.00%                    |
| <b>Land Use &amp; Ecology</b>     | 8                | 5                       | 70.63%                     |
| <b>Emissions</b>                  | 13               | 5                       | 43.46%                     |
| <b>Totals</b>                     | <b>113</b>       | <b>100</b>              |                            |
| <b>Innovation</b>                 | 5                | na                      | na                         |

## Green Star Office Asset PILOT

### **Stakeholder Review and Comment Submission**

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Credits in the areas of Energy, Transport and Water appear to be effectively evenly weighted. In reviewing the activities and attributes that attract credits in these areas and the typical ability of an existing building to be improved in these areas the following comments are offered:

- Energy – notwithstanding the specific queries raised relating to a number of the credits in this area a reasonable proportion of the credits in this area should be able to be accessed through retrofit or change in existing buildings, as such the currently proposed rating is likely to be appropriate. It should be noted however that many of the credits that are practically available in existing buildings through retrofit or change will involve active engagement and investment by the building tenants.
- Transport - a reasonable proportion of the credits in this area should be able to be accessed through retrofit or change in existing buildings, as such the currently proposed rating is likely to be appropriate
- Water - a reasonable proportion of the credits in this area should be able to be accessed through retrofit or change in existing buildings, as such the currently proposed rating is likely to be appropriate