








GREEN STAR – HEALTHCARE v1

The GBCA is committed to ensuring ease of use and transparency of all its Green Star tools. With the release of the Green Star - Healthcare v1 tool, the following 'traffic light system' has been developed to outline how each credit has changed since the PILOT version. This indicates whether it is now easier or harder to achieve the credit, or similar to the requirements in the PILOT tool. Improving standards across industry has had an impact on credit compliance, and wherever possible the text and format of each credit has been clarified, simplified and refined.

KEY

	Benchmark higher than PILOT in line with feedback, Healthcare Design (TWG) and Green Star - Office v3.	<p>Summary:</p> <ul style="list-style-type: none"> • Energy Conditional Requirement has been added. 10% improvement on BCA "Reference Building" required as per Green Star - Healthcare v1 Green House Gas Emissions Calculator Guide. • In response to stakeholder feedback the eligibility criteria have been expanded to include buildings comprised of 80% BCA class 9A or 9C, 8 and 5; with min. 50% BCA Class 9A or 9C; • Documentation requirements have been aligned with Green Star - Office v3, Green Star - Education v1 and Green Star - Retail Centre v1; • In response to stakeholder feedback, the weighting of the Water category was increased while the weighting of the Materials category was decreased; • Calculators and associated guides have been amended in line with learning outcomes from PILOT projects and public feedback; • Credit numbering has been aligned across all Green Star rating tools, so the same number will be applicable to the same credit across all rating tools; • Benchmarks and compliance requirements for Green Star - Office v3 have been adopted where appropriate, i.e. there was no justification for building type specific differences; • The definition of Occupied Functional Area (OFA) has been amended to require 1 hour of continuous occupation per 24 hour period, rather than a total occupancy of 1 hour per 24 hours. Exclusions have been specified.
	Significant revision or change to credit criteria made.	
	As PILOT; and/or Clarification to credit criteria made; and/or Revision to compliance requirements made.	

Credit No.	Credit Name	Update Outcome	Summary of Change
MANAGEMENT			
Man - 1	Green Star Accredited Professional		Benchmark as PILOT. Alignment with Green Star - Office v3.
Man - 2	Commissioning Clauses		Benchmark as PILOT. Alignment with Green Star - Office v3 with clarifications that training need not be in the specifications, but rather a commitment be provided that training occurs.
Man - 3	Building Tuning		Compliance requirements expanded as Green Star - Office v3 to ensure that the aims of the credit are being met: <ul style="list-style-type: none"> • Requires a Building Tuning Report to be produced and made available to the design team, to facilitate understanding of the operational phase of green buildings; • Clarifies exactly what is expected of the full re-commissioning that is required 12 months after practical completion.
Man - 4	Independent Commissioning Agent		Compliance requirements expanded as Green Star - Office v3 to ensure that the aims of the credit are being met: <ul style="list-style-type: none"> • Clarifies that the Independent Commissioning Agent (Agent) must be involved at each major stage of the project from schematic design (through to final re-commissioning, if 'Commissioning - Building Tuning is claimed); • Requires that the Agent not be an employee of any services design, contractor or sub-contractor organisation that has been involved in the installation of the commissioned systems. • Requires that the Agent be appointed for Green Star - Office Design assessment; to make the 'Design' rating more comparable to the 'As Built' rating, a commitment to appoint no longer suffices.

Credit No.	Credit Name	Update Outcome	Summary of Change
Man - 5	Building Guides	●	Formerly 'Building Users' Guide'. Credit criteria expanded to include the requirement for both a Building Users' Guide, and a Building Maintenance Guide. Requirements for Building Users' Guide expanded as Green Star - Office v3 to include monitoring and targeting for water, waste and indoor environment quality in addition to energy. In response to stakeholder feedback and following the TWG agreement, 'Green Procurement' has been included in the guide. Draft Building Users' Guide and Building Maintenance Guide accepted to demonstrate compliance for Design rating, an actual copy of the Guides required for an As Built rating.
Man - 6	Environmental Management	●	Benchmark as PILOT. Alignment with Green Star - Office v3.
Man - 7	Waste Management	●	Alternate methods of demonstrating compliance provided as Green Star - Office v3.
Man - 8	Credit not applicable to this tool.	—	
Man - 9	Building Management System	●	Additional criterion has been included to require the building management system (BMS) to actively control systems, not solely monitor them. A list of systems has been detailed within the technical manual.
Man - 10	Credit not applicable to this tool.	—	
Man - 11	Maintainability	●	New credit - adopted from Green Star - Education v1.
Man - 12	Construction Indoor Air Quality Plan	●	Formerly Man-8. Clarifications made throughout in response to PILOT stakeholder feedback, no change in benchmark. Removed requirement for 2 week building flush out period. This was replaced with a requirement for all ductwork to be clean or cleaned in accordance with the National Air Duct Cleaners Association ACR 2006 Standard prior to occupancy.
Man - 13	Sustainable Procurement Guide	●	Formerly Ene-7 'Medical Equipment Efficiency'. In line with stakeholder feedback and TWG agreement the credit has been transferred from the Energy category, PILOT feedback suggested this is a management issue. Number of points available reduced from 2 to 1. The credit criteria have been changed to require the production of a sustainable procurement guide in accordance with the Australian Procurement and Construction Council's (2007a) 'Australian and New Zealand Government Framework for Sustainable Procurement'. Requirements expanded to include sustainable procurement of clothes washers, dishwashers, and medical laboratory equipment, as well as medical equipment.
IEQ			
IEQ - 1	Ventilation Rates	●	PILOT tool required 90% of nominated area to comply for the PILOTs in line with Ov2, this has been updated to 95% in line with Green Star - Office v3. Credit Criteria clarified as Green Star - Office v3 for differently serviced buildings (i.e. naturally ventilated vs. mechanically ventilated). Number of points available increased from 3 to 4 (2, 3 and 4), to emphasise the high benefits to health, wellbeing and recovery rates.
IEQ - 2	Air Change Effectiveness	●	PILOT tool required 90% of nominated area to comply for the PILOTs inline with Ov2, this has been updated to 95% in line with Green Star - Office v3. Credit Criteria clarified as Green Star - Office v3 for differently serviced buildings (i.e. naturally ventilated vs. mechanically ventilated). Green Star - Office v3 deemed-to-satisfy approach adopted for BCA Class 5 office space within healthcare facilities.
IEQ - 3	CO2 Monitoring & Control and VOC Monitoring	●	Credit Criteria clarified as Green Star - Office v3 for differently serviced buildings (i.e. naturally ventilated vs. mechanically ventilated).
IEQ - 4	Daylight	●	Benchmark raised from daylight factor of 2.5% in all areas, to 3% in bedded patient areas and 2.5% in other areas; in line with stakeholder feedback, expert advice, and healthcare specific publications on daylighting. DF levels to be taken at FFL - previously desk height. Alternate method of demonstrating compliance provided, as Green Star - Office v3.

Credit No.	Credit Name	Update Outcome	Summary of Change
IEQ - 5	Thermal Comfort	●	Acceptability limits to be included for naturally ventilated spaces. Alternate methods of demonstrating compliance for naturally ventilated buildings provided. Credit Criteria clarified for differently serviced buildings (i.e. naturally ventilated vs. mechanically ventilated), as Green Star - Office v3. In line with stakeholder feedback, credit criteria changed to include a stipulation that where health services regulations/codes dictate the temperature of a particular area, those requirements shall take precedence over the Green Star Criteria.
IEQ - 6	Hazardous Materials	●	Following research, the following clarification has been provided: A Hazardous Materials Survey for buildings completed in 2005 or later is only required to address Lead paint; it does not have to address Asbestos or PCB. Scope of the credit expanded to address other hazardous materials - lead and Polychlorinated Biphenyls (PCBs).
IEQ - 7	Internal Noise Levels	●	Tightened criteria to ensure that the aims of the credit are being met, as Green Star - Office v3. Credit now requires adherence to the 'satisfactory' (more stringent) limits of AS/NZS 2107:2000.
IEQ - 8	Volatile Organic Compounds	●	Credit now addresses VOCs in five categories, with one point for each: Paints, Adhesives and sealants, Flooring (including carpets), Wall and ceiling coverings, and Mattresses. Number of points available increased from 4 to 5., one for each category. As Green Star - Office v3, scope of the credit expanded to address all flooring, not just carpet. Additional guidance for mattresses has been included. <u>Reduced benchmark for paints and sealants/adhesives.</u>
IEQ - 9	Formaldehyde Minimisation	●	Expanded 'Formaldehyde Emission Limits' values table to include additional testing methods.
IEQ - 10	Mould Prevention	●	Credit Criteria clarified as Green Star - Office v3 for differently serviced buildings (i.e. naturally ventilated vs. mechanically ventilated).
IEQ - 11	Daylight Glare Control	●	Requirement for blinds to be automatic has been removed. Manually operated blinds now acceptable.
IEQ - 12	High Frequency Ballasts	●	As PILOT.
IEQ - 13	Electric Lighting Levels	●	As PILOT. Clarifications to definitions made.
IEQ - 14	External Views	●	Aim clarified. Compliance criteria expanded and clarified. Diagram incorporated. Exclusions incorporated for transitional spaces, and rooms that are required to be dark for functional reasons.
IEQ - 15	Individual Thermal Comfort Control	●	Credit criteria clarified for naturally ventilated spaces. Compliance requirements expanded and clarified. Deemed to satisfy criteria introduced for naturally ventilated buildings that have achieved IEQ-1 'Ventilation rates'.
IEQ - 16	Exhaust Riser	●	Aligned credit criteria with OV3 by adding following requirements: <ul style="list-style-type: none"> • Provides no less than 0.2L/s/m² for 100% of the nominated area; • Has a capacity of 0.35L/s/m² for 100% of the nominated area on any individual floor; and Adjusted credit criteria to specify that all print/photocopy rooms must be exhausted to the riser.

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IEQ - 17	Air Distribution System	●	Compliance requirements strengthened and clarified, including the provision of an illustration. Deemed to satisfy criteria introduced for naturally ventilated buildings that have achieved IEQ-1 'Ventilation rates'.
IEQ - 18	Outdoor Pollutant Source Control	●	Credit criteria changed to specify compliance with applicable ASHRAE Standards. Compliance Requirements streamlined.
IEQ - 19	Places of Respite	●	Credit criteria changed to accept places of respite in other indoor spaces rather than only atria, and expended to include measurable criteria against which to assess compliance. Noise level requirements specified by reference to the "Draft Interim Sound and Vibration Design Guidelines for Hospital and Healthcare Facilities". Compliance Requirements streamlined. Compliance documentation reduced for ventilation criteria - Where naturally ventilated places of respite are provided in a building that has achieved IEQ-1 'Ventilation rates', only cover letter required.
ENERGY			
Ene - Con	Energy Conditional Requirement	●	New requirement added for Version 1. It is a conditional requirement to achieve a Green Star rating, that the project's predicted greenhouse gas emissions must be equal to, or show an improvement over, the predicted greenhouse gas emissions of the 'benchmark building' as determined by the Green Star – Healthcare v1 Greenhouse Gas Emissions Calculator (10% above BCA JV3 requirements).
Ene - 1	Greenhouse Gas Emissions	●	To more accurately reflect the aim of the credit, name changed from 'Energy Improvement' to 'Greenhouse Gas Emissions'. Number of points available has been increased from 15 to 20, with the full 20 points available for Zero Net Operating Emissions, aligning with Green Star - Office v3. Incremental steps in improvement are relative to the 'benchmark building'. The 'benchmark building' has been revised following feedback in the PILOT process. Its definition can be found in the Green Star – Greenhouse Gas Emissions Calculator Guide.
Ene - 2	Energy Sub-metering	●	Credit criteria has been revised to no longer require sub-metering for items more than 100kVa. Instead the credit criteria only requires that sub-metering is provided to separately monitor lighting and general power consumption for all primary functional areas. Examples of functional areas have been included along with details of how functional areas can be grouped for metering. It has been clarified that an effective mechanism for monitoring energy consumption must be present.
Ene - 3	Peak Energy Demand Reduction	●	This credit has been aligned with the Green Star - Office v3 Ene-3 Peak Energy Reduction credit. This included the following changes: Clarification that any energy generation systems used to comply with this credit must be included within the Green Star Energy Calculator for the Ene-1 credit. One point is awarded for 15% and two points, for 30% reduction, rather than awarding two points for 25% reduction. An alternative compliance option is available to accommodate naturally ventilated buildings. The criteria can be met though demonstrating a flatter overall energy demand curve.
Ene - 4	Lighting Zoning	●	Total number of points available has been raised from one to two points. The additional point is for providing automated lighting controls to the nominated area, which specifically excludes spaces such as ward areas and operation rooms.
Ene - 5	Credit not applicable to this tool.	—	
Ene - 6	Car Park Ventilation	●	Definition of car parks covered by this credit clarified; N/A has been introduced for single storey open-air car parking in response to stakeholder feedback.
Ene - 7	Credit not applicable to this tool.	—	
Ene - 8	Stairs	●	Credit removed from tool - In line with stakeholder feedback.

Credit No.	Credit Name	Update Outcome	Summary of Change
Ene - 9	Efficient External Lighting	●	Green Star requirements updated to be more stringent than the BCA compliance requirements. All external lighting is now required to have a light source efficacy of at least 65 lumens/watt. Previously 50 lumens/watt.
TRANSPORT			
Tra - 1	Provision of Car Parking	●	As PILOT.
Tra - 2	Fuel-Efficient Transport	●	Reduced number of points from two to one incorporating additional point requirements for car sharing programs, hybrids and other alternative fuel vehicles into single point Credit Criteria. Total small car spaces requirement for 10 of parking spaces or min 10 spaces removed. New requirement is for 10% of spaces rounded up (to the nearest whole space). Expanded Credit Criteria to address a broader range of fuel-efficient vehicles, not just small cars/mopeds/motorbikes.
Tra - 3	Cyclist Facilities	●	Benchmarks as per PILOT. Reduced requirement from major entrance for additional point from 10m to 50m.
Tra - 4	Commuting Mass-Transport	●	Introduced a Deemed-to-Satisfy approach to automatically award points to projects within pre-defined postcodes if they are within 500m (walking distance) of a bus interchange with at least 6 bays or a train station with at least four platforms.
Tra - 5	Credit not applicable to this tool.	—	
Tra - 6	Transport Design and Planning	●	Credit re-named from Pedestrian Routes to Transport Design and Planning. A requirement for the development of a travel plan has been added to the Credit Criteria.
WATER			
Wat - 1	Occupant Amenity Water	●	Rise in benchmark to ensure the aims of the credit are being met and to encourage water reuse/recycling, as Green Star - Office v3. Reduced the maximum number of points that can be achieved without water reuse/recycling (i.e. purely through fixtures/fittings) from four to two.
Wat - 2	Water Meters	●	Rise in benchmark in line with industry progress as Green Star - Office v3. Number of points available reduced from 2 to 1. An additional point is no longer available for connection to the BMS as this is standard practice. Clarified that an effective mechanism for monitoring water consumption must be present.
Wat - 3	Landscape Irrigation	●	Revised the criteria to no longer automatically reward water-efficient irrigation systems; all systems must demonstrate a measurable 90% reduction in potable water consumption. Expanded the Credit Criteria to reward eligible xeriscape gardens.
Wat - 4	Heat Rejection Water	●	Criteria expanded to address all water-based heat rejection systems in the building, not just cooling towers - as Green Star - Office v3. Significant clarification to compliance requirements to address buildings with different servicing strategies. Clarified how the criteria must be met for different types of systems (i.e. naturally ventilated, mechanically air-conditioned, mechanically assisted naturally ventilated (MANV), and mixed-mode ventilated spaces).
Wat - 5	Fire System Water	●	Criteria tightened as Green Star - Office v3 to ensure that the aims of the credit are being met. Expanded the Credit Criteria to reward fire protection systems which do not expel water for testing. Revised the criteria to no longer allow collected water to be reused off site.
Wat - 6	Potable Water Use for Equipment	●	Reduced benchmark for equipment with once through cooling. Now requires 95% to use other than once through cooling. Previously 100%.

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MATERIALS			
Mat - 1	Recycling Waste Storage	●	Specific size requirement replaced with expanded criteria for facilities being 'adequately sized'.
Mat - 2	Building Reuse	●	New credit formed by combining 2 separate credits (reuse of facade and reuse of structure) as Green Star - Office v3; points available remain the same. Criteria revised from addressing the reused proportion of the new building, to addressing the proportion of the original building that was reused.
Mat - 3	Recycled Content & Re-used Products & Materials	●	The PILOT credits Mat-10 Reused Products & Materials and Mat-9 Recycled Content Products and Materials have been merged to one credit. The points are awarded independently. Reused Products and Materials must be 2% of contract value as per Green Star - Office v3.
Mat - 4	Concrete	●	Rise in benchmark in line with industry progress, as Green Star - Office v3: <ul style="list-style-type: none"> Increased all thresholds for cement replacement to reflect best practice; Introduced specific thresholds for cement replacement in stressed concrete.
Mat - 5	Steel	●	As PILOT.
Mat - 6	PVC Minimisation	●	As PILOT.
Mat - 7	Timber	●	Compliance Requirements streamlined. As Green Star - Office v3, benchmark lowered to encourage industry uptake of the credit. Now requires 95% of all timber in project to comply - previous 100%
Mat - 8	Design for Disassembly	●	As PILOT.
Mat - 9	Dematerialisation	●	New Credit adopted from the Green Star - Office Version 3 rating tool.
Mat - 10	Credit not applicable to this tool.	—	
Mat - 11	Flooring	●	As Green Star - Office Interiors v1.1 Specification documentation allowed for design rating, no change in benchmark.
Mat - 12	Joinery	●	As Green Star - Office Interiors v1.1 Specification documentation allowed for design rating, no change in benchmark.
Mat - 13	Loose Furniture	●	As Green Star - Office Interiors v1.1 Specification documentation allowed for design rating, no change in benchmark.
Mat - 14	Ceiling, Walls and Partitions	●	As Green Star - Office Interiors v1.1 Specification documentation allowed for design rating, no change in benchmark. PILOT required 80% of ceilings, walls and partitions to be entered into calculator. New level is 100% for full points.
LAND USE & ECOLOGY			
Eco	Ecological Value of Site: Conditional Requirement	●	The Eco-Conditional Requirement developed by an Ecology Expert Reference Panel, in collaboration with the GBCA for Green Star - Retail Centre v1 and Green Star -Industrial PILOT has been included in this tool. Developments that are within 100m of a wetland that is not defined as being of high ecological value can be assessed under this tool provided a number of initiatives to protect the wetland are undertaken. Refer to the Technical Manual for full details.
Eco - 1	Topsoil	●	Aim and Credit Criteria have been amended to align with Green Star - Office v3. 'Not applicable' options have been expanded to include refurbishment projects and projects where the topsoil on-site is inherently non-productive.
Eco - 2	Reuse of Land	●	Credit Criteria have been expanded to include refurbishments and building extensions, as per Green Star - Office v3. Further definition of 'previously developed land' has been provided.
Eco - 3	Reclaimed Contaminated Land	●	'Not applicable' options have been expanded to include building extensions, as per Green Star - Office v3.
Eco - 4	Change of Ecological Value	●	Credit Criteria have been amended to align with Green Star - Office v3 as follows: <ul style="list-style-type: none"> - Points are no longer awarded where there is net reduction in native vegetation; and - Points can now be awarded where the site is re-used (e.g. refurbishments), and contains threatened or vulnerable species are present, as long as it can be demonstrated that they are adequately protected.

Credit No.	Credit Name	Update Outcome	Summary of Change
EMISSIONS			
Emi - 1	Refrigerant ODP	●	Aligned with Green Star - Office v3. Increased the threshold for one point from 95% to 100%. Reduction in number of points available from 2 to 1. Incorporated deemed to satisfy criteria where the building is 'Naturally Ventilated' as per IEQ-1 'Ventilation Rates' or Mechanically Assisted Naturally Ventilated (MANV).
Emi - 2	Refrigerant GWP	●	Increased number of points available from 1 to 2. Benchmark is now incremental as Green Star - Office v3 with the second point introduced to award full replacement (100%) of refrigerant charge. Incorporated deemed to satisfy criteria where the building is 'Naturally Ventilated' as per IEQ-1 'Ventilation Rates' or Mechanically Assisted Naturally Ventilated (MANV).
Emi - 3	Refrigerant Leaks	●	Combined from 2 separate credits (Refrigerant Leak Detection and Refrigerant Recovery), points available remain the same as Green Star - Office v3. The second point (refrigerant recovery) is now dependant on the first being achieved. Reduced the percentage of the refrigerant that must be captured through refrigerant recovery from 100% to 95% (by volume).
Emi - 4	Insulant ODP	●	As PILOT.
Emi - 5	Watercourse Pollution	●	As Green Star - Office v3, where a site contains or is immediately adjacent to, a waterway, an additional point is available for creating a vegetated riparian buffer zones between the development and the watercourse. Points available increased from 2 to 3 for this purpose. Credit criteria now require filtration in line with Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999); formerly - the Australian and New Zealand Environment Conservation Council (ANZECC)'s Guidelines for Urban Stormwater Management.
Emi - 6	Discharge to Sewer	●	As Green Star - Office v3, where a blackwater system is being installed an additional point is available for a Blackwater Treatment Maintenance Plan and maintenance contract. Points increased from 4 to 5 for this purpose.
Emi - 7	Light Pollution	●	Strengthened Credit Criteria to require that no external luminaire has an upward light output ratio of more than 5%. All references to AS1158 removed.
Emi - 8	Legionella	●	Scope of the credit expanded to address Legionella causes in water based heat rejection systems. Previously the credit penalised all water based heat rejection systems.
Emi - 9	Trade Waste Pollution	●	Clarifications made throughout in light of the PILOT experience, benchmark increased to demonstrate 'best practice'. Expanded the Credit Criteria to address pollutants other than total dissolved solids. Credit criteria now refer to specific levels of pollutants which can be discharged to sewer, by requiring all projects to comply with the ACT's Trade Waste Acceptance note TW1.
Emi - 10	Airborne Emissions	●	Credit removed from tool - In line with stakeholder feedback.
INNOVATION			
Inn - 1	Innovative Strategies and Technologies	●	Aligned with Green Star - Office v3. Refined the criteria to award points if the initiative is a technology or process that is considered a 'first' in Australia or in the World; OR if the project substantially contributes to the broader market transformation towards sustainable development in Australia or in the World. One point is awarded when either of the above is true for the Australian market; and two points are awarded when either of the above is true for the Global market.
Inn - 2	Exceeding Green Star Benchmarks	●	Aligned with Green Star - Office v3. Refined the criteria to award points for a solution that results in the elimination of the specific negative environmental impact of the project targeted by an existing credit, and two points for a solution which results in a substantial restorative environmental impact targeted by an existing credit.
Inn - 3	Environmental Design Initiatives	●	Aligned with Green Star - Office v3. Refined the criteria to award points for each initiative in the project which viably addresses a valid environmental concern outside of the current scope of this Green Star tool.