



Nature Based Cities
Review of Australian ESD Rating Tools
April 2022



ESD rating tools are used in Australia to benchmark and categorise buildings and development precincts in relation to environmental performance (i.e. 'best practice' 'excellence' or 'world leadership')

The purpose of this review is to evaluate the strengths and weaknesses of ESD rating tools in Australia in encouraging the incorporation of vegetation and green landscaping by design teams and developers.

Tools included in the review include mandatory frameworks used for development approvals as well as voluntary tools used by the industry to promote sustainable design attributes.










Each tool's technical standards are reviewed to identify elements and criteria which influence the extent and quality of on-site vegetation.

The contribution of vegetation to the overall score/rating; the attributes and shortcomings of credit criteria; and, suggested improvements to enhance landscape quality and extent are identified.

Note that this review does not encompass an analysis of spatial planning controls such as planning scheme overlays.



ESD Rating Tools Review

ESD Rating Tool		Development Type	Use
	Green Star Buildings	All building types	Australia
	Green Star Homes	Single Dwelling delivered by a volume home builder	Australia
	Green Star Communities	Communities, precincts, and neighbourhoods	Australia
	BESS Built Environment Sustainability Scorecard	All building types	Victoria
	BASIX Building Sustainability Index	Residential buildings including alterations and additions	New South Wales
	EnviroDevelopment	All building types and Precincts: <ul style="list-style-type: none"> • Masterplanned Communities • Residential Subdivisions • Seniors Living • Multi Unit Residential • Mixed Use • Industrial • Retail / Commercial • Education • Health and Aged Care 	Australia
	Climate Active Buildings	Via NABERS: all building types except for apartment buildings, hospitals and office tenancies. Via Green Star Performance: All building types except single detached dwellings	Australia
	Climate Active Precinct	Precincts i.e. urban renewal project barangaroo	Australia
	Green Factor Tool	Small Scale Residential Multi Unit Residential Retail/ Shop Commercial/ Office Industrial/ Warehouse Public Building	City of Melbourne City of Moreland City of Port Phillip City of Yarra Other*

Green Star Buildings v1.1

Credits and Point allocation overview

- 41 Credits across 7 categories
- 15 Mandatory Credits (Minimum Expectation)
- 100 Possible points (Credit Achievement and Exceptional Performance)
- 4 Star Rating – Minimum Expectation + 15 points
- 5 Star Rating – Minimum Expectation + 35 points
- 6 Star Rating – Minimum Expectation + 70 points



Credits with direct impact on nature based design

Category	Credit	Points
Healthy	Connection To Nature	2 points (credit achievement)
Resilient	Heat Resilience	1 point
Nature	Impacts to Nature	2 points (credit achievement)
Nature	Biodiversity Enhancement	2 points (credit achievement) + 2 Points (exceptional performance)
TOTAL		9 points

Green Star Buildings v1.1



Key Findings

- No mandatory requirement to integrate vegetation into projects;
- Green Star rating can be achieved with NO landscaping;
- Failing to meet partial credit criteria deems entire credits non-compliant, which can lead to project teams not targeting other relevant initiatives in the credit;



Suggested Improvements

- Include minimum requirements for vegetation;
- Restructure credit framework to expand vegetation specific credits and incorporate partial compliance for specific criteria met;
- Review category contribution to final score.

Green Star Buildings v1.1

The following attributes and shortcomings relate to credit requirements which have direct impact on landscaping and vegetation.



- Incentive for provision of indoor planting, green roofs and green walls (internal and external) and implementing maintenance plans ;
- Early engagement of ecologist and conservation initiatives rewarded;
- Incentive for prioritizing selection of indigenous species and provision of habitat;
- Point contribution for increasing area of vegetation and diversifying species selection, prioritizing native, indigenous and endangered;
- Encouragement to engage with national conservation initiatives or partnerships with restoration and conservation organizations outside the project boundary.



- Definition of nature inspired design interventions are subject to the GBCA assessor's interpretation of the design team's narrative;
- Credits where compliance metric is related to the greater of floor area or site area can make achievement unfeasible for specific projects;
- Heat Island Effect credit can be achieved with specific hard scaping and roofing materials. No specific threshold for vegetation or water features;
- No incentive for incorporating productive species to the site.

Green Star Homes v1

Credits and Point allocation overview

- 14 Credits across 3 categories
- All credits in the standard must be targeted and achieved
- Certification:
 - Green Star Designed (Design Review)
 - Green Star Certified (As Built)



Credits with direct impact on nature based design

Category	Credit	Points
Heat Resilience	Resilient	Mandatory (can be achieved with no vegetation)

Green Star Homes v1



Key Findings

- No mandatory requirement to integrate vegetation into projects;
- Green Star rating can be achieved with NO landscaping.



Suggested Improvements

- Include minimum requirements for extent, quality and diversity of vegetation;
- Restructure credit framework to expand vegetation specific credits for as built certification and include an ecology category.

Green Star Homes v1

The following attributes and shortcomings relate to credit requirements which have direct impact on landscaping and vegetation.



- Where landscaping is included, the project team must provide information on whether natural or built features were optimised to minimise the impacts of solar radiation through retention or planting of mature or deciduous trees;
- Where landscaping is provided, project teams must outline if landscaping has been designed using drought-tolerant species.



- Heat Island Effect credit can be achieved with specific hard scaping and roofing materials. No specific threshold for vegetation or water features;
- Resilience essentials credit only has two optional criteria that relate to vegetation.

Green Star Communities v1.1

Credits and Point allocation overview

- 33 Credits across 5 categories
- 100 Possible points
- 4 Star Rating – Minimum of 45 points
- 5 Star Rating – Minimum 60 points
- 6 Star Rating – Minimum 75 points



Credits with direct impact on nature based design

Category	Credit	Points
Liveability	Healthy and Active Living - Recreational Facilities	1 point
Liveability	Access to Fresh Food - Local Food Production	1 point
Environment	Ecological Value	2 points
Environment	Heat Island Effect	1 point
TOTAL		5 points

Green Star Communities v1.1



Key Findings

- No mandatory requirement to integrate vegetation into projects;
- Green Star rating can be achieved with NO landscaping;
- Extensive tool scope and limited number of credits increase elements and criteria compiled into one credit;
- Failing to meet partial credit criteria deems entire credits non-compliant, which can lead to project teams not targeting other relevant initiatives in the credit.



Suggested Improvements

- Include minimum requirements for vegetation;
- Restructure credit framework to include vegetation specific credits and incorporate partial compliance for criteria met.



Green Star Communities v1.1

The following attributes and shortcomings relate to credit requirements which have direct impact on landscaping and vegetation.



- Design review credit lists several landscaping and vegetation criteria to be incorporated at early stages of a project;
- Incentive for community food production areas on site with governance and management plans in practice;
- Incentive for improvement of site's ecological value compared to pre-development conditions;
- Ecological value weightings are well defined and there's a high incentive for prioritizing native species, regeneration and water features.



- Design Review credit has low reward for an extensive list of requirements;
- Lack of definition on what constitutes a local park. Park requirement is only one part out of 8;
- Biodiversity enhancement is heavily reliant on ecologists' assessments to determine improvement percentage. No benchmark or specific requirements outlined in the tool;
- Heat Island Effect credit can be achieved with specific hard scaping and roofing materials. No specific threshold for vegetation or water features.

BESS (Built Environment Sustainability Scorecard)

Credits and Point allocation overview

- 9 categories
- Minimum scores for Water, Energy, Stormwater and Indoor Environment Quality
- Best Practice – 50% overall score
- Excellence – 70% overall score

Credits with direct impact on nature based design

Category	Credit	Score
Water	Water Efficient Landscaping	16.7% of Water category
Urban Ecology	Vegetation	Up to 50% of category
Urban Ecology	Green Roofs	12.5% of category
Urban Ecology	Green Walls and Facades	12.5% of category
Urban Ecology	Food Production	12.5% of category
TOTAL		up to 6% of overall score

Category Weightings

Category	Weighting
Management	4.5%
Water	9.0%
Energy	27.5%
Stormwater	13.5%
IEQ	16.5%
Transport	9.0%
Waste	5.5%
Urban Ecology	5.5%
Innovation	9.0%

BESS (Built Environment Sustainability Scorecard)



Key Findings

- No mandatory requirement to integrate vegetation into projects;
- BESS compliance can be achieved with NO landscaping;
- Over simplified credit descriptions and little guidance on compliance.



Suggested Improvements

- Include mandatory credits for vegetation or minimum score for urban ecology category;
- Update tool notes with more detailed guidance on compliance and minimum requirements;
- Review category weightings.



BESS (Built Environment Sustainability Scorecard)

The following attributes and shortcomings relate to credit requirements which have direct impact on landscaping and vegetation.



- Vegetated areas for food production can be counted toward the vegetation and food production credits;
- Incentive for incorporating green roofs and walls;
- Area requirements for food production credit allows for balcony planters to be compliant.



- Point allocation for vegetated site area is capped at 30%. No incentive for exceeding benchmark;
- Green roof and green walls credit has no minimum requirements or guidance on best practice;
- Food production credit description in tool notes has no maintenance requirements. The credit is heavily reliant on occupant behavior to achieve its purpose during operation.

BASIX (Building Sustainability Index)

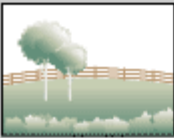


Credits and Point allocation overview


- 3 categories (Water, Energy and Thermal Comfort)
- Minimum scores for Water and Energy
- Outcomes – Pass or Fail

Water

Landscape * **Fixtures *** **Alternative water** **Alternative water details *** **Pool & Spa**

Enter the details of your proposed landscape.

Landscape	Details
Garden & lawn 	Enter the total area of garden and lawn *
Indigenous species 	Enter the area of indigenous or low water use species To get a list of species, use either: The Department's list of indigenous species (pdf) OR Sydney Water's plant selector tool and select from the list of "One drop" plants 

 Landscape plan required

BASIX (Building Sustainability Index)



Key Findings

- No mandatory requirement to integrate vegetation into projects;
- BASIX compliance can be achieved with NO landscaping;
- Landscaping only assessed in relation to water consumption for irrigation.



Suggested Improvements

- Include ecology section with minimum requirements for vegetation.



BASIX (Building Sustainability Index)

The following attributes and shortcomings relate to the tools' impact on landscaping and vegetation.



- Incentive for indigenous and low water use species;
- When no landscaping is added the following alert appears: You have entered a 'zero' or 'very small' formal landscape area. Please ensure the landscape area entered in BASIX is correct and consistent with your DA plans, otherwise you may invalidate your development application.



- No ecology or vegetation section;
- Oversimplistic compliance tool for self assessment;
- Zero landscaping alert stills allows for a compliant certificate.

EnviroDevelopment

Overview

- 32 Credits across 6 categories
- 19 Mandatory credits and minimum achievements for sub credits.
- 102 Possible points
- Minimum six credits for Urban Ecology credit
- No distinct ratings levels ('Certified' status only)

Credit	Criteria	Score
Aquatic Ecosystems	1.3.1 Weeds	Mandatory
Urban Ecology	1.3.2 Urban Heat Island	Mandatory
Urban Ecology	1.3.3 Ecological Value	Up to 3 points
Urban Ecology	1.3.5 Native Species	Up to 2 points
Urban Ecology	1.3.6 Green Roofs and Walls	Up to 2 points
Urban Ecology	1.3.7 Podium Planting	1 point
Urban Ecology	1.3.8 Community and productive gardens	1 point
Urban Ecology	1.3.9 Canopy Cover Increase	Up to 2 points
Urban Ecology	1.3.11 Fast and Slow grow Species	1 point
Urban Ecology	1.3.12 Planting in laneways	1 point
Urban Ecology	1.3.13 Viable Planting	1 point
Urban Ecology	1.3.14 Fauna	1 point
Urban Ecology	1.3.16 Brids and Bees	1 point
Urban Ecology	1.3.17 Deep Planting	Up to 2 points
Urban Ecology	1.3.18 Exceeding Green Space Benchmark	Up to 5 points

Minimum of 6 out of 27 points for urban ecology



Key Findings

- Certification can be achieved solely based on design commitments with no 'as built' verification required;
- The tool isn't widely used and may not have the same recognition as similar rating schemes;
- Urban ecology credit has an extensive list of options for compliance and unique criteria that aren't incorporated in other tools;
- Mandatory requirements for urban ecology can be achieved without significant impact on the extent of landscaping.



Suggested Improvements

- Expand mandatory requirements for urban ecology to include criteria that would increase the project's vegetation coverage and diversity;
- Increase minimum point threshold in the urban ecology credit;
- Update standard to include specific metrics and benchmarks for urban ecology credits.

EnviroDevelopment

The following attributes and shortcomings relate to the credit specific impacts on landscaping and vegetation.



- Urban ecology credit has an extensive list of options for compliance and a holistic approach to urban ecology;
- Incentive for early engagement of ecologist and landscape designer;
- Incentive for green roofs and walls;
- Incentive for community and productive gardens;
- Provision of habitat is encouraged in two credit criteria.

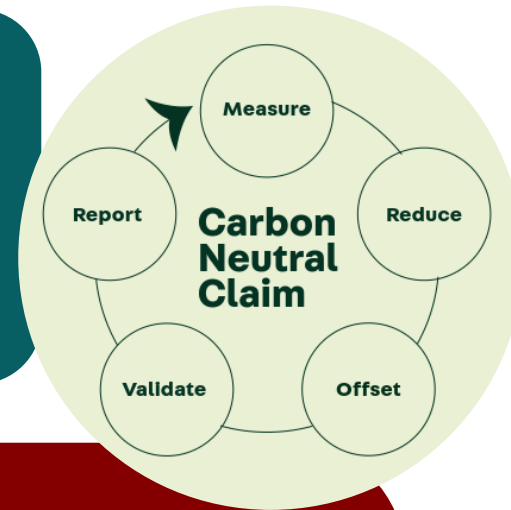


- Minimum point threshold for urban ecology can be achieved with only a few initiatives despite the extensive list of options and elements covered;
- Most compliance options for urban ecology have brief descriptions and no specific credit requirements or benchmarks to be met;
- Supporting documentation requirements are mostly statements of compliance from landscape designers.

Climate Active

Overview

- Carbon Neutral certification tool for existing/completed buildings
- Based on emissions arising during occupation/operations only
- Annual audit required for ongoing certification



Key Findings

- The Climate Active methodology is limited to operational emissions arising from electricity, natural gas, stationary energy, water consumption, waste generation and refrigerant leakage;
- The carbon sequestered within vegetation is NOT encompassed by the carbon accounting framework utilised by Climate Active;
- Embodied carbon in building materials is not included as the focus is on operational emissions.

Climate Active

The following attributes and shortcomings relate to the tool's impacts on landscaping and vegetation.



- None.



- The tool's framework provides no incentive for increasing the extent of vegetation within buildings or precincts;
- Carbon neutral certification does not account for carbon sequestration effect of on-site vegetation;

Green Factor Tool

Overview

- City of Melbourne led tool in early stages
- Landscape specific tool
- Scoring system based on cumulative benefits of vegetation across 8 categories:
 1. Urban temperature regulation (cooling) Regulating
 2. Habitat for biodiversity Supporting
 3. Runoff mitigation Regulating
 4. Recreation Cultural
 5. Air purification Regulating
 6. Place values and social cohesion Cultural
 7. Aesthetic benefits Cultural
 8. Food Supply Provisioning
- Minimum score of 0.55 (= Green Factor)



Green Factor Tool



Key Findings

- Information on category weightings and vegetation element contribution to score is limited;
- Configured for Buildings NOT Precincts;
- The tool was developed to meet City of Melbourne objectives;
- Useful model for quantifying the impact of vegetation.



Suggested Improvements

- Expand scope to be used in other locations;
- Publish standard with detailed orientation on using the tool and disclose element weighting and contribution to final score.

Green Factor Tool

The following attributes and shortcomings relate to the tools' impact on landscaping and vegetation.



- Requires early engagement of landscape designers;
- All site vegetation can be included in the assessment (internal, external, stacked planters, etc).;
- Landscape focused tool and inputs for Indigenous, native, exotic and productive species;
- User friendly interface and rapid self assessment when all information is available;
- Comprehensible reporting of results displayed through graphical and prescriptive data.



- No standard or manual published outlining element weightings and ways to improve your score;
- Requires high level of specification for accurate results. (i.e. plant species, quantities, areas, soil depth);
- Green infrastructure elements and their ratings have been developed specifically for the City of Melbourne objectives.

Summary of Findings

Commonly used ESD rating frameworks including Green Star do not mandate the incorporation of vegetation.

Certified ratings, including those defined as achieving 'excellence' in sustainable design can be achieved without any vegetation.

Most tools could be readily reconfigured to set minimum thresholds for the extent and quality of landscaping and vegetation.

The City of Melbourne's *Green Factor* tool is the only specific tool which currently quantifies the multiple attributes and benefits of vegetation.

