ACUMEN PRACTICE NOTES

Australian Institute of Architects

Sustainability framework for practice

ENVIRONMENT **Published:** 11 June 2020 | **Edited:** 22 December 2020

This note provides summary guidance of applicable rating tools, organisations and resources for sustainable practice in the Australian context with particular reference to NSW practice.

Our Lady of Assumption Catholic Primary School by BVN (Image: Brett Boardman) | Winner 2019 Milo Dunphy Award for Sustainable Architecture

Background

Climate breakdown and biodiversity loss represent the twin challenges of the climate and environment emergency. Every development has an impact on the environment.

Buildings use 40 per cent of the world's energy, emit 40 per cent of the world's carbon emissions and use 20 per cent of the world's available drinking water (NSW Environment Protection Authority, 2019).

In addition, the opportunity lost of returning impacted landscape to its natural state or the clearing of the landscape to create development has a major impact on habitat, biodiversity, carbon sequestration, water quality and more.

To reduce the impact on the environment, buildings and developments should be designed in accordance with minimum sustainable and regenerative principles:

- to restore the impact of carbon dioxide (Co_2) emissions produced by energy use in the construction and operation of the development (carbon neutral)
- to capture rainwater and reuse it within the building and its landscape setting
- to ensure building and landscape materials have a certified supply chain assessment, environmental product assessment and ethical sourcing
- to allow for buildings that are resilient to future climate driven threats and change and designs that account for social sustainability and diversity.

The Institute's Sustainable Architecture Award Checklist (2020) outlines the assessment criteria for good sustainable design and highlights the objectives of sustainability are to:

- 'Enhance individual and community wellbeing and welfare by following a path of economic development that safeguards the welfare of future generations
- Provide for equity within and between generations
- Protect biological diversity and maintain essential ecological processes and life support systems
- Improve the quality of people's lives
- Mitigate the impact of climate risk'.

Certification – Rating systems and tools

Momentum in sustainable and regenerative design will no doubt accelerate in the market as more completed projects lead with certification and evidence-based case studies to demonstrate the practical benefits. There is currently limited mandatory assessment and reporting across built environment developments in Australia.

There is no mandatory reporting for businesses to be certified as carbon neutral, yet there is a desire for architects to lead by example (refer Resources below for further information).

Figure 1 provides an illustration of some of the current tools for residential design.

The following table highlights some of the environmental rating systems and tools currently available to Australian projects.

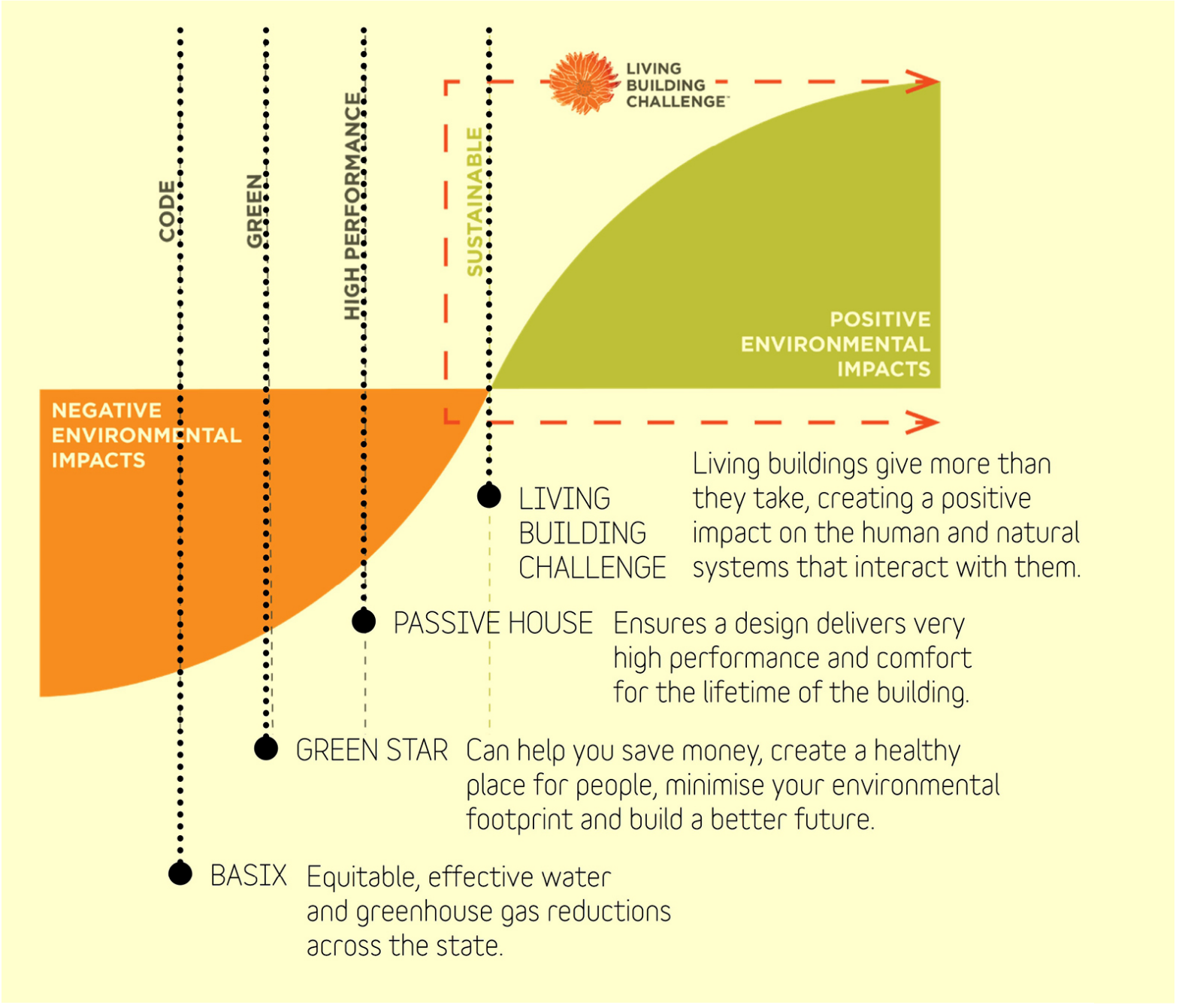

Figure 1: Tools for residential design in Australia. (Source: Contributing author, adapted from International Living Future Institute). Note: The Building Sustainability Index (BASIX) is applicable to NSW residential dwellings.

Certificate	Type	Organisation and link	Assessment	Mandatory
DECLARE	Materials	International Living Future Institute living-future.org/	Internal assessment teams	No
Good Environmental Choice Australia (GECA)	Materials	geca.eco	Self-selection Internal assessment teams	No
Green Star Building Design and Construction Operation	Communities Buildings Interiors All building types	Green Building Council of Australia new.gbca.org.au	Green Star Accredited Professional	No
Infrastructure sustainability rating	Infrastructure Master planning Landscape	Infrastructure Sustainability Council of Australia isca.org.au	IS accredited assessor	No
Living Building Challenge 4.0 Standard Net Zero Energy Building	Residential – single dwellings Community housing	International Living Future Institute living-future.org/	Living Building accredited auditor, with certificate issued in two stages	No

Living Community Challenge Living Petal Challenge Zero Carbon Zero Energy	Retail Research and education Landscape and infrastructure All building types			
Nationwide House Energy Rating Scheme (NatHERS) Minimum 6 Stars Energy Minimum water consumption	Residential single dwelling, alterations and additions over $50,000	nathers.gov.au	NatHERS Accredited assessors Self-assessment for small projects	Yes
National Australian Built Environment Rating System (NABERS) Energy Water Waste (offices) Indoor Environment (offices) Carbon Neutral	Apartment common areas Office Shopping centre Data centre Hospitals (public) Hotel	National program administered by the NSW Department of Planning, Industry and Environment nabers.gov.au	NABERS accredited assessors	Yes – for space office building over 1000m2 (Energy)
Passive House	Residential Educational Office buildings Indoor swimming pools	Passive House Institute passivehouse australia.org	Certified Passive House designer or consultant PHI accredited building certifier	No
WELL Building Standard	Commercial and institutional buildings and products	International WELL Building Institute wellcertified.com	WELL/Green Star accredited professional	No

ASBEC have developed a summary document Ratings Snapshot: Built environment sustainability frameworks commonly used in Australia (June 2021).

For further discussion of rating systems and tools, see the following Environment notes:

- A summary of urban assessment tools for application in Australia
- Non-residential building environmental rating tools – a review of the Australian market
- Passivhaus: the pathway to low energy buildings in Australasia

Resources

Organisations and programs

Architects Declare Australia

Australian architects' signatories to an 11-point declaration acknowledging the twin crises of climate breakdown and biodiversity loss as the most serious issue of our time. The aims of Architects Declare include raising awareness, advocating for industry change and to share knowledge and research.

Australian Passive House Association (APHA)

A not-for-profit organisation that promotes Passive House principles. Passive House, or Passivhaus, is a performance-based standard summarised by five design principles to ensure high thermal performance, energy efficiency and comfort for the lifetime of a building.

Australian Sustainable Built Environment Council (ASBEC)

A body of key organisations, including the Australian Institute of Architects, committed to a sustainable, productive, resilient built environment in Australia.

Australian Sustainable Business Group (ASBG)

A business representative body 'helping organisations deal with the substantial and rapidly changing environmental, and greenhouse laws and helping them to become more sustainable'.

Climate Active

A government-backed program that certifies businesses and organisations that have proven that they are measuring, reducing and offsetting their emissions, with a net result of zero emissions.

Climate Council Australia

A leading Australian climate change communications organisation that 'provide authoritative, expert advice to the Australian public on climate change and solutions based on the most up-to-date science available'.

Environment Institute of Australia and New Zealand

A professional association for environmental practitioners across Australia and New Zealand, providing opportunities for professional and academic dialogue across all sectors of the environmental industry.

EN 15804 Environmental Product Declaration (EPD)

BRE Global is internationally recognised for its expertise in Life Cycle Assessment (LCA). In consultation with industry stakeholders, BRE Global developed the comprehensive EPD Scheme in line with the European standard EN 15804.

Green Building Council of Australia (GBCA)

'The GBCA is committed to developing buildings, cities and communities that are healthy, liveable, productive, resilient and sustainable' The GBCA's rating system Green Star 'assesses the sustainable design, construction and operation of buildings, fit-outs and communities'.

Infrastructure Sustainability Council of Australia (ISCA)

A member-based, not-for-profit peak body operating in Australia and New Zealand with the purpose of enabling sustainability outcomes in infrastructure. ISCA provides an Infrastructure Sustainability (IS) rating scheme for planning, design, construction and operations of infrastructure assets as well as education, training, capacity building and knowledge sharing. ISupply connects suppliers of sustainable products and services with projects.

ISO Standards

ISO 14025

'ISO 14025:2006 establishes the principles and specifies the procedures for developing Type III environmental declaration programmes and Type III environmental declarations'.

ISO 14040

'ISO 14040:2006 describes the principles and framework for life cycle assessment (LCA) including: definition of the goal and scope of the LCA, the life cycle inventory analysis (LCI) phase, the life cycle impact assessment (LCIA) phase, the life cycle interpretation phase, reporting and critical review of the LCA, limitations of the LCA, the relationship between the LCA phases, and conditions for use of value choices and optional elements'.

Living Future Institute of Australia (LFIA)

LFIA is an affiliate of the International Living Future Institute that provides education, training, advocacy and network opportunities across several innovative international programs.

'The Living Building ChallengeTM is the built environment's most rigorous performance standard. It calls for the creation of building projects at all scales that operate as cleanly, beautifully and efficiently as nature's architecture. To be certified under the Challenge, projects must meet a series of ambitious performance requirements, including net zero energy, waste and water, over a minimum of 12 months of continuous occupancy'.

The Centre for Liveability Real Estate – Liveability Features

Developed in collaboration with the design, construction and assessment industries, the 17 Liveability Features cover aspects such as location, floor plan and layout, key building structure elements, energy and water saving inclusions and energy rating.

NSW government resources

City of Sydney 'Sustainable Sydney 2030'

Sustainable Sydney 2030 is a set of goals established for the city to help make it as green, global and connected as possible by 2030. It includes Resilient Sydney – A strategy for city resilience 2018, cityofsydney.nsw.gov.au/vision/sustainable-sydney-2030

Greater Sydney Commission

'The *NSW Climate Change Policy Framework* sets out the aspirational long-term objective for NSW to achieve net-zero emissions by 2050'.

Pathways towards net-zero emissions in Greater Sydney include: improved building efficiency, building and precinct scale renewables, increased public transport, lower parking rates, car sharing, electric and shared autonomous vehicles, carpooling and vehicle efficiency, and water diversion from landfill.

NSW Environmental Projection Authority (EPA)

The EPA is an independent statutory authority that acts as the primary environmental regulator for New South Wales. The EPA partners 'with business, government and the community to reduce pollution and waste, protect human health, and prevent degradation of the environment'.

NSW Government Resource Efficiency Policy (GREP)

'The aim of the NSW GREP is to reduce the NSW Government's operating costs and lead by example in increasing the efficiency of its resource use'. The policy drives resource efficiency by NSW Government agencies in four main areas – energy, water, waste and air emissions from government operations.

Global corporate sustainability reporting

B-Corp Certification

B Lab is a not for profit organisation using business as a force for good. 'Certified B Corporations are businesses that meet the highest standards of verified social and environmental performance, public transparency, and legal accountability to balance profit and purpose'.

Global reporting initiative (GRI) Integrated reporting

GRI is an independent international organisation that has pioneered sustainability reporting since 1997. 'GRI helps businesses and governments worldwide understand and communicate their impact on critical sustainability issues such as climate change, human rights, governance and social wellbeing'. By supporting integrated reporting, a focus is bridging the gap between 'integrated thinking for executives and the reality of sustainability and financial reporting practice for organisations'.

Science Based Targets

Setting greenhouse gas emission reduction targets in line with climate science. Tools and resources to help set science-based carbon reduction targets.

United Nations Sustainable Development Goals

'The United Nations Sustainable Development Goals are a call for action by all countries – poor, rich and middle-income – to promote prosperity while protecting the planet. They recognise that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection'.

An Architecture Guide to the UN 17 Sustainable Development Goals Volume 1 and 2 can be downloaded at uia2023cph.org/the-guides

Further resources

BuiltBetter – The Low Carbon Living BuiltBetter Knowledge Hub is designed to assist better policy and practice decisions in the built environment. The Knowledge Hub database provides resources, insights, projects and networks sourced from researchers, industry and the government. The project is funded by the CRC for Low Carbon Living Ltd supported by the Cooperative Research Centres program, an Australian Government initiative by the Department of Industry, Innovation and Science.

Cooperative Research Centres for Low Carbon Living (CRCLCL) – A guide to low carbon precincts

Every building counts – 'A practical plan for emissions reduction' – A policy toolkit jointly developed by the Property Council of Australia and Green Building Council of Australia (GBCA)

GRESB – 'assesses and benchmarks the Environmental, Social and Governance (ESG) performance of real assets, providing standardised and validated data to the capital markets'.

National Bushfire Response – Developed by the Australian Institute of Architects in response to the recent bushfire crisis and in concert with an approach to sustainable design. This dedicated website page includes practical steps the profession can take to help the community and the initiative Architects Assist to provide the public access to disaster recovery architecture and design pro bono services.

The Footprint Company (TFC) – A property specific, life cycle assessment software and analytics provider in Australia and New Zealand. Resources include TFC's cloud-based footprint calculator life cycle assessment software for design driven carbon footprint abatement from buildings, and TFC's 'The GreenBook', an Australian on-line embodied carbon life cycle inventory for construction materials and assemblies.

YourHome – Advice for consumers of building or renovating a home with low impact on the environment.

NOTE

A+ members have on-line access to Australian Standards, joint Australia/ New Zealand Standards (including AS/NZ adoptions of ISO and IEC Standards) and the National Construction Code

www.architecture.com.au/cpd/practice-resources/ →

References

NSW Environment Protection Authority, 2019 *NSW State of the Environment 2018*

The NSW Built Environment Committee (BEC) kindly contributed to the content of this note.