

Buildings that Breathe and NABERS

Date: 18/07/2023 | Project No: 23172

Passive design and building technology guidelines aim to create climate-appropriate buildings. For Southeast Queensland's subtropical climate, the primary passive design guideline is the Brisbane City Council's 'Buildings that Breathe'.

Buildings that Breathe serves as the primary environmental design guide for Brisbane's local building development applications. The Buildings that Breathe (BTB) guidance plays a crucial role in creating low-energy buildings that effectively respond to Southeast Queensland climate conditions, primarily through the following key principles:

- + Natural air and ventilation, which reduces the reliance on air-conditioning, connecting occupants to 100% outdoor air.
- + Shading and awnings, which minimize cooling loads, thus reducing the energy consumption of air-conditioning plant.
- + Illuminating with daylight, which reduces the dependence on artificial lighting and associated energy consumption.

There are other national design tools that promote environmentally positive outcomes in the building industry, building on the guidance provided by Buildings that Breathe, such as NABERS and Green Star. NABERS is considered the industry best practice rating tool for assessing design and operational energy, water, waste, and indoor environment efficiency for a variety of sectors.



While Buildings that Breathe focuses primarily on the initial design phase, NABERS Commitment Agreements bridge the gap between design and performance. They build on and complement the guidance by considering the performance of buildings through modelling verification and operational certification. By combining passive and active design principles, Commitment Agreements verify the success of these strategies in reducing energy consumption.

It is crucial when addressing energy efficiency in buildings to assess and provide design responses specific to the site, local climate, and operations without favouring a particular design feature. Common design principles without contextual consideration could lead to more expensive, more upfront carbon demanding or less spatially efficient solutions, such as:

- + Solar panels where heavily shaded as the energy generation would be less valuable than other technology solutions.
- + Shading devices on overshadowed elevations in town centres where focus may be best placed on façade performance.
- + Natural ventilation depending on façade integration, location, orientation, or through inappropriate services designs.

To address these issues, NABERS can play a crucial role in the design process, by ensuring that the potential limitations are considered and appropriately addressed. Design teams are focused on solutions that provide better outcomes within project and site constraints. If natural ventilation and shading result in the best design solution for a building, these factors contribute to a higher NABERS energy rating.

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The principles of 'Buildings that Breathe' have been shown to provide strong outcomes for passive building energy efficiency. When combined with NABERS, these principles can create a powerful framework for improving the performance of buildings towards a Net Zero environment.

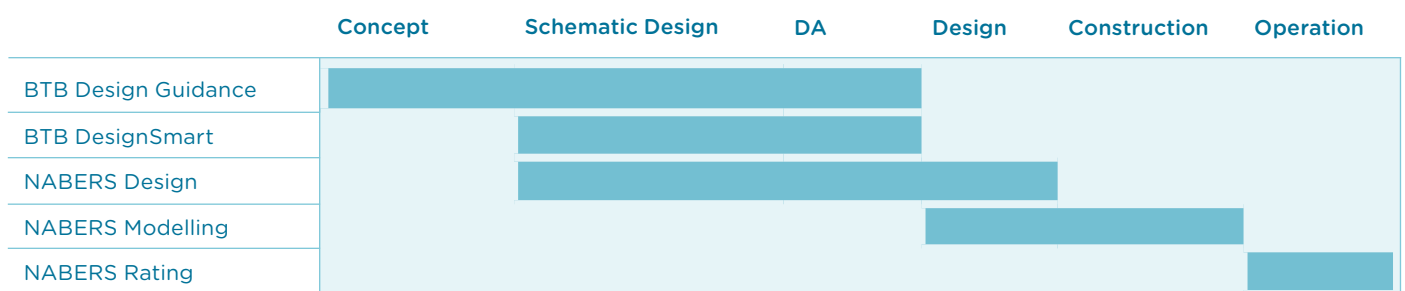
Best practice design considerations and scope collaboration between the two tools

| Discipline | Energy Efficiency Design Consideration | Design Guidance | DesignSMART Design Review Panel* | Modelling Verification** & Operational Certification |
|---------------|---|---|----------------------------------|--|
| Location | Orientation | <i>Not typically controllable for commercial developments</i> | | |
| Architectural | Façade performance (glazing and shading) | BTB / NABERS | BTB | NABERS |
| Architectural | Façade - openability | BTB / NABERS | BTB | NABERS |
| Architectural | Envelope performance (insulation) | NABERS | - | NABERS |
| Mechanical | Heating, ventilation and air conditioning | NABERS | - | NABERS |
| Electrical | Lighting selection and controls | NABERS | - | NABERS |
| Electrical | Solar PV system | BTB / NABERS | BTB | NABERS |
| Hydraulics | Pumping and water treatment | NABERS | - | NABERS |

*Brisbane City Council released a design focused pre-lodgement package, DesignSMART, to guide projects via a collaborative schematic design process with expert reviewers.

**Whilst NABERS is primarily an operational rating tool, NABERS Commitment Agreements are reported on in the design stage, which require detailed modelling to assess the building's performance. These agreements ensure that all stakeholders actively work towards sustainable design and construction practices.

The below graphic provides an overview of the typical design & construction process and the stages at which Buildings that Breathe and NABERS integrate.



Collaboration between Buildings that Breathe and NABERS is a powerful way to achieve sustainable building outcomes. The principles of Buildings that Breathe and NABERS combine to create a powerful framework for improving building performance towards a carbon-neutral environment.