Specifying Sustainable Water Filtration

Understanding LCAs, EPDs and Green Star Certification



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INTRODUCTION

Sustainability is now a decisive factor in product specification, with architects required to show how materials and systems support environmental responsibility, compliance, and long-term performance. Beyond aesthetics and function, specification now intersects with policy objectives, client expectations, and industry commitments to reduce carbon footprints and improve occupant outcomes.

Transparency has placed third-party verified information at the centre of specification. Tools such as Life Cycle Assessments (LCAs) and Environmental Product Declarations (EPDs) provide structured means of evaluating impacts across the full product life cycle, while frameworks like Green Star translate this data into credits and benchmarks that communicate a project's overall environmental performance. For architects, understanding how these pathways interact is essential to aligning product choices with broader sustainability objectives.

This paper clarifies the sustainability frameworks that govern filtration system specification, focusing on LCAs, EPDs and Green Star. It explains how product- and building-level certifications support informed choices in modern architectural practice.



WHAT SUSTAINABLE SPECIFICATION MEANS FOR WATER FILTRATION SYSTEMS

Sustainable specification for water filtration systems goes beyond water efficiency to include energy use, carbon impacts, durability and their role in occupant health. These systems should be assessed across the full life cycle, from production and operation to maintenance and disposal. A balanced specification approach considers not only the environmental footprint of the system itself but also its capacity to deliver consistent, safe and high-quality drinking water.

The health benefits of effective water filtration should be a primary consideration in sustainable design. Properly specified systems reduce exposure to chlorine by-products, heavy metals, microplastics and persistent pollutants such as PFAS (“forever chemicals”). By removing these contaminants, filtration directly supports occupant wellbeing and reduces risks linked to long-term exposure. Beyond the direct health benefits, filtration can also reduce reliance on bottled water, helping to cut plastic waste and its associated environmental and health impacts.

To ensure filtration systems meet both health and sustainability objectives, architects must rely on recognised tools that provide transparent and verifiable performance data. Product-level certifications or labels, such as WaterMark, the Water Efficiency Labelling and Standards (WELS) scheme and ecolabelling programs such as GreenRate (administered by Global GreenTag), help validate claims about durability, water efficiency, environmental impact and material health.

Equally important are LCAs and independently verified EPDs, which quantify whole-of-life impacts and allow meaningful comparison between products. In Australia and New Zealand, EPD Australasia provides a recognised program for publishing EPDs that meet international standards.

At the project level, frameworks such as Green Star and WELL recognise verified product evidence, such as EPDs and LCAs, as part of their assessment methodology. This evidence is then converted into credits that allow specification choices to contribute directly to broader sustainability objectives.

In systems with integrated heating or cooling functions, it is also essential to consider refrigerant impacts. Verification of the use of low Global Warming Potential (GWP) refrigerants ensures that these systems operate with reduced climate impact. This supports broader sustainability goals by minimising greenhouse gas emissions.

PRODUCT-LEVEL CERTIFICATIONS

Product-level certifications apply to specific products, systems or components rather than whole buildings. They provide assurance that an item meets defined performance, safety or sustainability standards.

Examples relevant to water filtration systems include:

- **WaterMark:** Certification scheme mandatory for plumbing products in Australia that confirms compliance with relevant AS/NZS standards for safety and performance.
- **WRAS (Water Regulations Approval Scheme):** UK approval scheme ensuring products do not contaminate drinking water supplies.
- **EPD International/EPD Australasia:** Programs that publish third-party verified EPDs in line with ISO standards.
- **Global GreenTag:** An ecolabel and sustainability certification system that offers a range of product certifications, including the GreenTagCert™, LCARate™ and EPD Program. These certifications assess products across health, environmental and social criteria.
- **Performance certifications:** Filtration-specific standards such as NSF/ANSI 42, 53 and 401, which validate claims for contaminant reduction and system performance.



BUILDING-LEVEL CERTIFICATIONS

Building-level certifications apply to an entire building or project and assess multiple categories of performance. They require aggregated evidence from many products and systems, including LCAs and EPDs, to demonstrate compliance across environmental, health and social sustainability indicators.

Examples include:

- **Green Star:** Australia’s leading sustainability rating scheme administered by the Green Building Council of Australia (GBCA), covering energy, water, materials and indoor environment quality as well as broader social and governance factors.
- **WELL Building Standard:** An international framework emphasising occupant health and wellbeing, with credits linked to water quality, air quality, light and comfort.
- **BREEAM (Building Research Establishment Environmental Assessment Method):** Widely adopted international certification framework that assesses environmental, social and economic sustainability outcomes.

LCAS AND EPDS EXPLAINED

What is an LCA?

A Life Cycle Assessment (LCA) is a **scientific method for quantifying the environmental impacts** of a product, system or process across its entire life cycle. It accounts for all stages of production and use, from raw material extraction and manufacturing through to distribution, operation, maintenance and end-of-life.

LCAs are conducted according to ISO 14040 and ISO 14044. These standards outline the principles and the general framework that should be followed when conducting an LCA. Outputs are reported across multiple impact categories, including global warming potential (CO_2-e), water scarcity, eutrophication, acidification and human health impacts.

What is an EPD?

An Environmental Product Declaration (EPD) is a **standardised, third-party verified document that communicates the results of an LCA** in a consistent and comparable format.

Prepared in accordance with ISO 14025 (Type III Environmental Declarations) and EN 15804 (construction sector rules), an EPD discloses datasets such as raw material consumption, energy and water use, emissions to air, water and soil and waste generation. These are aggregated into environmental impact categories such as climate change contribution, resource depletion and pollution.

Relationship between LCA and EPD

An LCA provides the analytical foundation; an EPD communicates those results. The relationship between the two is sequential and complementary. An EPD cannot exist without an underlying LCA. While LCAs are analytical and flexible in scope, EPDs are standardised and regulated through Product Category Rules (PCRs), which define the declared unit, system boundaries and required impact indicators to ensure consistency and comparability across products.

For example, a PCR for water filtration systems might clarify whether operational energy use is included, define the functional unit (e.g. litres of water filtered) and specify which environmental indicators must be reported.

For practical use, EPDs allow specifiers to evaluate and compare the lifecycle impacts of similar products while also providing verified data that can be written directly into project specifications. In addition, EPDs play a key role in supporting green building certifications such as Green Star, WELL and BREEAM by supplying the evidence needed to substantiate credit claims.

Global GreenTag vs EPD International/EPD Australasia

Specifiers should distinguish between the program operator, which manages the process of verification and publication, and the EPD document itself, which is the standardised output of the underlying LCA. Programs such as Global GreenTag, EPD International and EPD Australasia exist to provide architects and specifiers with transparent, third-party verified environmental data that can be trusted in design and certification processes. They act as program operators, responsible for registering, verifying and publishing EPDs in line with international standards.

Within this shared purpose, each program has a different scope. Global GreenTag functions as both a certification and ecolabel scheme, offering EPDs alongside broader branded sustainability ratings such as GreenRate and LCARate. EPD International (The International EPD® System) operates globally as a program administrator for ISO- and EN-compliant EPDs across a wide range of sectors. EPD Australasia, aligned with EPD International, serves as the regional operator for Australia and New Zealand.

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GREEN STAR EXPLAINED

What is Green Star certification?

Green Star, administered by the Green Building Council of Australia (GBCA), is an independent, third-party verified process that assesses the sustainability of buildings, fitouts and communities against nationally recognised benchmarks. A certified Green Star rating demonstrates to clients, regulators and occupants that a project has achieved measurable outcomes in areas such as energy efficiency, carbon reduction, health and resilience.

In 2020, the Green Star Buildings tool was introduced to replace Design & As Built, expanding the scope beyond environmental outcomes to address broader sustainability and resilience objectives.[1] It features eight categories:

- **Responsible:** Ensures responsible procurement, supply chain integrity and circular design practices.
- **Leadership:** Recognises projects that set industry direction or demonstrate innovation capacity.
- **People:** Addresses social inclusion, diversity and community wellbeing.
- **Healthy:** Promotes physical and mental health through air, light, acoustics and safe materials.
- **Places:** Supports the creation of safe, inclusive and thriving environments.
- **Nature:** Rewards biodiversity enhancement, ecological protection, and nature connectivity.
- **Positive:** Focuses on reducing carbon, water and materials impacts to achieve climate-positive outcomes.
- **Resilient:** Encourages design strategies that respond to climate change, shocks and long-term stresses.

This transition reflects a shift from a purely environmental lens to a holistic ESG approach, integrating environmental, social and governance issues into one rating tool.

The Green Star rating scale ranges from 1 Star (minimum practice) to 6 Star (world leadership), with each level reflecting higher sustainability standards. The Green Star rating validates that the building's sustainability performance meets nationally recognised standards. This validation translates to lower operational costs, improved occupant wellbeing and stronger asset value.

How to get Green Star certification

To achieve Green Star certification, a project must be registered with the GBCA under the relevant rating tool. The project team then prepares and submits evidence demonstrating compliance with selected Green Star credits across the relevant assessment categories.

Each credit in the Green Star rating tool is allocated a specific number of points, which reflect its relative importance to sustainability outcomes. Projects earn points by demonstrating compliance with the requirements of each credit.

Green Star Buildings establishes minimum standards for elements such as fresh air, daylight access, acoustic comfort, and the exclusion of harmful toxins. These requirements, known as Minimum Expectations, must be met for a project to be eligible for certification, regardless of the total number of points earned. In addition to these minimum requirements, product-level evidence such as EPDs and LCAs supports credits in the Responsible and Positive categories, particularly around responsible sourcing, embodied carbon, water efficiency, and lifecycle impacts.

Depending on system design, water filtration can also contribute to the Healthy category by improving drinking water quality and supporting occupant wellbeing, and to the Resilient category by reducing reliance on external potable supplies. Collectively, this evidence contributes to the overall points tally, with every verified submission strengthening the pathway to higher Green Star ratings.

CASE EXAMPLE: ZIP HYDROTAP

Zip Water is an Australian manufacturer with over 75 years of experience in advanced drinking water solutions. The company is best known for its HydroTap range, an integrated system that delivers instant filtered boiling, chilled, sparkling and ambient water, alongside unfiltered hot and cold options. Designed for both residential and commercial applications, HydroTap combines convenience with high-performance filtration.

Zip Water's HydroTap range demonstrates how water filtration systems can align with contemporary sustainability and health objectives. Supported by an independently verified EPD and detailed LCA, the HydroTap provides transparent data on climate impact and resource use from production through to end of life. The HydroTap Environmental Impact Calculator further enables designers to model lifecycle impacts by providing a practical tool for evidence-based decision-making. Importantly, the EPD can be used to contribute points under the Green Star Buildings framework, particularly within the Responsible and Positive categories, supporting projects in achieving higher ratings.

The HydroTap range also carries a suite of certifications and credentials that reinforce its compliance and performance. These include WaterMark certification for plumbing compliance, NSF/ANSI Standards 42, 53 and 401 for filtration performance and WELS ratings for water efficiency. The system is also lead-free, with MicroPurity filtration proven to remove up to 99.99% of contaminants, including chlorine by-products, heavy metals, asbestos, microplastics and PFAS. Organisational certifications such as ISO 14001 (environmental management) and ISO 9001 (quality management), along with membership in the Australian Packaging Covenant Organisation (APCO), demonstrate a broader commitment to circularity and responsible practice.

Environmental credentials summary: Zip HydroTap

- Independently-verified EPD (meets ISO 14025 and EN 15804)
- LCA Impact Calculator (conforms to ISO 14040-44)
- APCO member (packaging 100% recyclable and manufactured with up to 70% recycled materials)
- Organisational ISO 14001 and ISO 9001 certifications (environmental management and quality)
- WaterMark certified including Lead free certified
- MicroPurity filters certified to NSF Standard 42 (Aesthetic Effects), 53 (Health Effects including PFAS reduction for filters 93701 and 93702) and 401 (Emerging Compounds/ Incidental Contaminants)
- WELS 5 & 6-star ratings

By delivering verified environmental performance, product certifications and advanced filtration, HydroTap provides specifiers with compliant data that supports Green Star credits while promoting health, wellbeing and reduced plastic use. It stands as a benchmark for how water filtration can deliver both environmental and human health benefits in sustainable building projects.

REFERENCES

[1] Green Building Council Australia. “A rating tool for a changing world.” GBCA. https://gbca-web.s3.amazonaws.com/media/documents/green-star-buildings-design-as-built-buildings-fact-sheet.pdf (accessed 26 September 2025).

All information provided correct as of October 2025. The term “Zip” is a trademark of Zip Heaters (Aust).