

**Case Study: Weighting of
impacts in GreenTag.
Plus LCA interaction in
BIM and LCADesign**

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The image shows a white tag with a hole at the top, set against a background of a modern building interior with a glass atrium and greenery. The tag features the 'GREEN TAG CERTIFIED' logo in green text and a circular green graphic. Below the logo, the text 'The New Benchmark in Certification of all Green Building Products' is written in white. At the bottom of the tag, the website 'www.ecospecifier.org' is displayed in white on a grey background. A small line of text at the very bottom of the tag reads 'Architect: Ecospecifier Subscribers | FJMT Faculty of Law, Sydney University'.

**GREEN TAGTM
CERTIFIED**

**The New Benchmark
in Certification
of all Green Building Products**

www.ecospecifier.org

Architect: Ecospecifier Subscribers | FJMT Faculty of Law, Sydney University

Why is GreenTag™ a world first?



GreenTag is the first product rating system to:

1. Combine 2 distinct rating systems into 1 unique scheme - LCA and Green Building Council 3rd Party accreditation;
2. Use LCA concepts to 'go beyond LCA' to quantify 'positive benefit' not just 'damage reduction';
3. To use 'building synergy' as a performance metric



Why is GreenTag™ a world first?



GreenTag is the first product rating system to:

4. Take LCA product assessment into the BIM world;
5. Deliver brand specific product LCA into a live BIM based LCA rapid eco-profiling tool- LCADesign



What is GreenTag™?



A screenshot of the GBCA website's Media Centre page. The page features a green navigation bar with links for Home, About, Green Star, Education & Courses, Events, Membership, Be Involved, Resources, Media Centre, and Shop. A search bar is located on the right. The main content area is divided into three columns: a primary article titled "Ecospecifier recognised under GBCA's product certification assessment framework" dated May 4, 2010; a "In This Section" sidebar with two other articles; and a "Related Categories" sidebar with links to Industry News, GBCA Media Releases, Executive Interviews, and Media Contact. An "Archive" section at the bottom right shows years 2010 and 2009. The background of the page shows a modern glass building with the address "275 George St, Sydney NSW".

GreenTag™ GreenRate: A Green Building Council of Australia (GBCA) accredited 3rd Party Certification system for Green Star™* Materials calculator credits

* Green Star™ is a Trademark of the Green Building Council of Australia



GreenTag Certification



- Also accredited Third Party Certifier for:
 - New Zealand GBC with Green StarNZ™
 - An ISO 14024 Compliant Type 1 Ecolabel
 - An ISO 17011 Guide 65 Compliant 'Conformance Assessment Body'



Certification of GreenTag



- *The scheme is currently also compliant under the following standards:*
- ISO 14040 and ISO 14044 relating to LCA process established, to secure a high level of scientific reliability and peer review by independent researchers.
- ISO 14025 Environmental Product Declarations & PCR Development
- Will be IP Aust and ACCC Certification Mark



Certification of GreenTag



The scheme is currently Certified under:

- ISO 9001:2008 for Quality Management Systems by DNV



GreenTag Standard



2 pathways to Certification
under GreenTag Standard:

- **LCARate**
 - holistic sustainability rating system
- **GreenRate**
 - GBCA 3rd Party Accredited Materials Calculator compliance assessment



GreenTag Components



LCARate – a ‘Beyond LCA’ weighted LCA based rating system of 6 key indicators:

1. Integrated Design Synergy (1+1=3)	10%
2. LCA EcoPoints Rating (excl Carbon)	40%
3. Health & Ecotoxicity	20%
4. Non LCA Biodiversity (timber & non-timber)	10%
5. Carbon Content	10%
6. Corporate Social Responsibility	<u>10%</u>
	100%



LCADesign content



The category life cycle impacts considered by the Ecospecifier EcoPOINT system includes but is not limited to:

- Energy and Fuel use;
- Air and Carbon Pollution;
- Ozone Depletion;
- Climate Change;
- Human Health (*typically only Cancer*);
- Ecosystem Quality (*typically not physical biodiversity impacts only chemical*);
- Eco-Toxins and Waste;
- Resource Depletion;
- Recycled content and
- Water Pollution.



LCADesign content



The Ecospecifier EcoPOINT is a number between Zero and One:

Where a score of 1 = a worst case business as usual (BAU) product

and

A score of 0 = no impacts at any stage (not really possible overall)



GreenTag Tier Certification Logos



ecospecifier global
**GREEN TAG
CERTIFIED**™



GOLD

Simple clear, easy specification and procurement metrics



GreenTag Tier Certification Logos



ecospecifier global
**GREEN TAG
CERTIFIED**



BRONZE
GreenRate | Level A

**Top 25% of
eco-products**

ecospecifier global
**GREEN TAG
CERTIFIED**



SILVER
GreenRate | Level A

**Top 20% of
eco-products**

ecospecifier global
**GREEN TAG
CERTIFIED**



GOLD
GreenRate | Level A

**Top 15% of
eco-products**

ecospecifier global
**GREEN TAG
CERTIFIED**



PLATINUM
GreenRate | Level A

**Top 10% of
eco-products**

**Bronze/Silver approximates
other ecolabel performance**



GreenTag Certification



**GREEN TAG™
CERTIFIED**



**PLATINUM
GreenRate | Level A**

GreenTag·¶ EcoPOINT¶	0.25¶	¶
GreenTag·Tier¶	PLATINUM¶	¶
GreenRate·Level¶	B¶	¶
GreenRate·Details:¶		
Building·Synergy¶	¶	¶
Health·&·Ecotoxicity¶	¶	¶
Biodiversity¶	¶	¶
LCA·Score¶	¶	¶
GHG·0.5kgCO ₂ ·/unit¶	¶	¶
CSR¶	¶	¶
Lic·Number:·AUS·XB·5600¶		
Product·Category:·XXXXXXXXXX¶		
Comparison·Product:·XXXXXXXXXX¶		
Ecospecifier·GreenTag·Program¶		
See·www.ecospecifier.com¶		



LCADesign : Products & Buildings



Stadium Australia: Sydney 2000 Olympics
Cradle to Grave 30yr Life Cycle
Assessment :

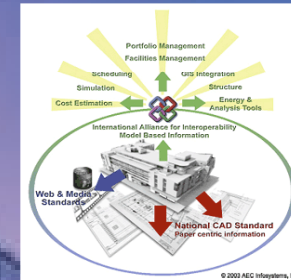
took 7 people 1.5 years



Interoperability: 3D CAD now BIM



3D is now 3⁺D or '*n*D'
and the new term is
Building Information Model = BIM



'The project was designed and documented in 3D using an integrated building model for architecture, structure and building services'

Monash University Caulfield Campus

Building H

Architects Wojciech Huczek

Photographer **Andrius Lipsys**

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BIM: The future of productivity



BIM is the new productivity driver of the building industry :

- Frank Gehry, Sir Norman Foster, SOM, HOK, Woods Bagot, ARUP using BIM today in leading projects around the world
- Governments such as the US General Services Administration
- QLD Project Services.



BIM: The future of productivity



BIM allows automatic takeoff and calculation of :

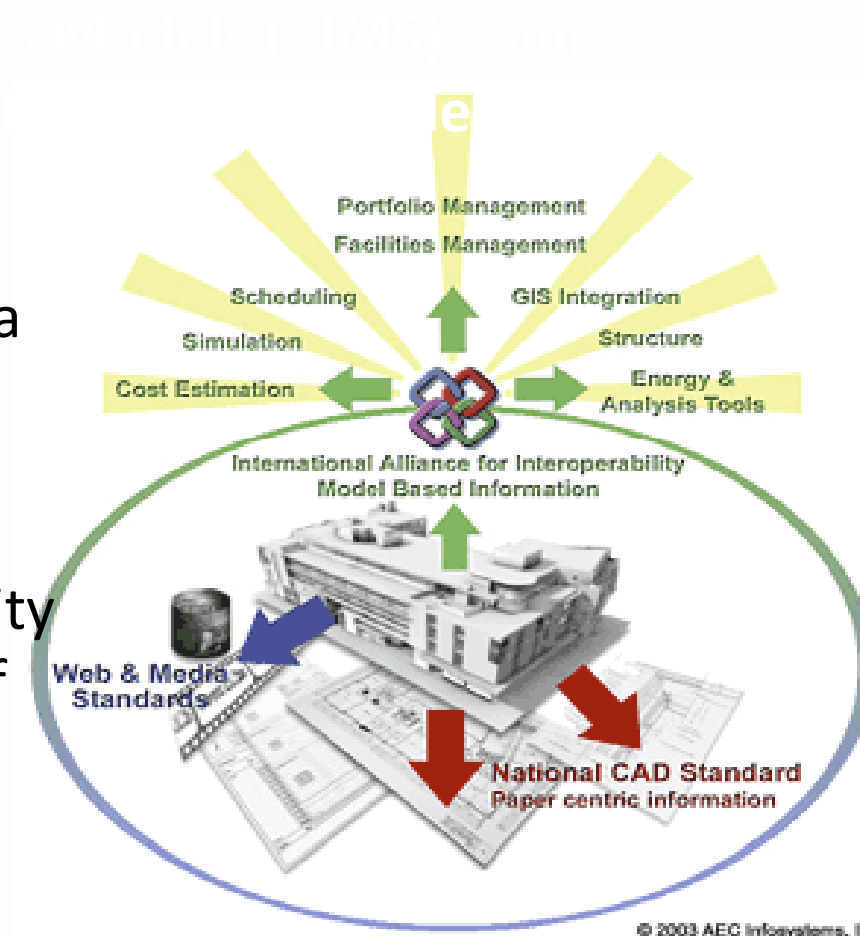
- building and element volume, area and dimensions
- documentation,
- energy assessment,
- buildability and clash analysis
- quantity surveying & cost analysis
- energy, thermal comfort, lighting & daylighting, ventilation and air-flow simulation
- GIS systems integration
- Structural & MEP Design Finite element analysis & Computation Fluid Dynamics (CfD)
- ***Facilities management model and functions***
- ***Life cycle analysis***



Interoperability: IFC Format

Global Industry Foundation Class (IFC) data format

- Standard Data Transfer Protocols
- Program Interoperability
- Integration of Databases



The future of Green Building Ratings



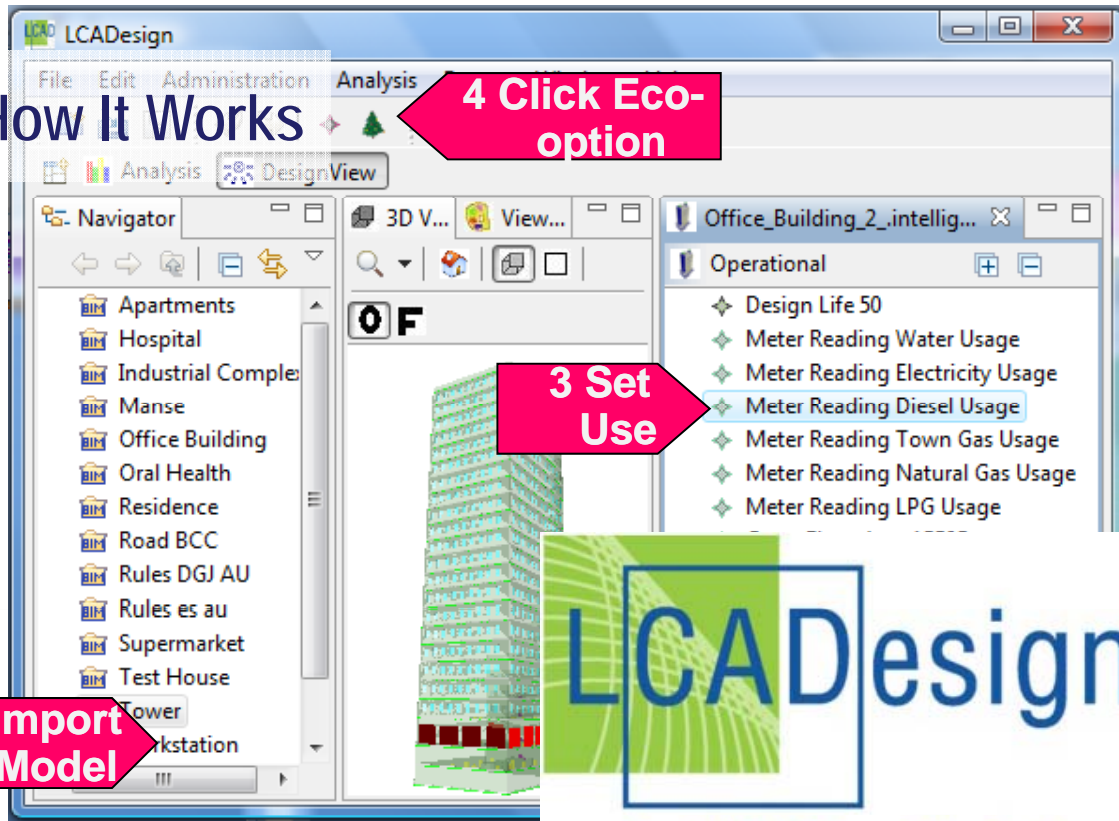
LCADesign



- Is world leading new software developed in Australia by CRC for Construction Innovation
- Only LCA software in world that does whole of life- whole of building Sustainability rating with real world environmental and health inputs and energy and water inputs sourced from energy and water modelling from normal consulting processes (e.g. as required by LEED etc)



How It Works



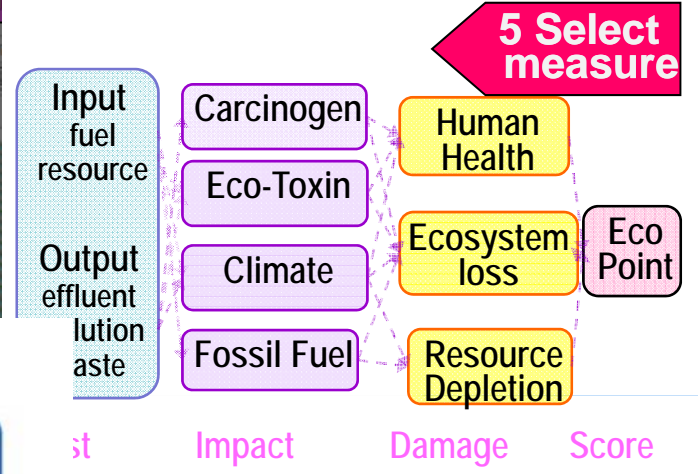
4 Click Eco-option

3 Set Use

1 Import Model

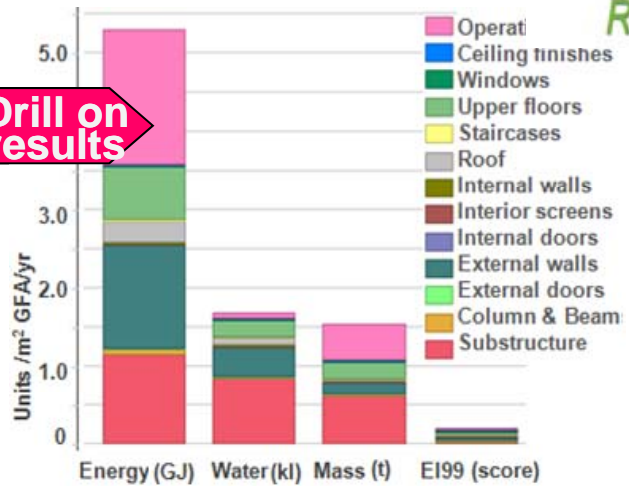
LCADesign

Rapid BIM Ecoprofiling Software

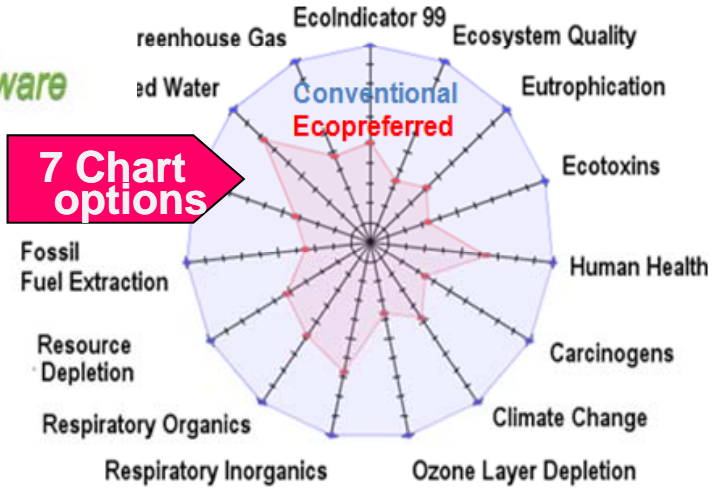


5 Select measure

6 Drill on results



7 Chart options



The future of LCA is here, now....



Ecospecifier has global rights to use:

- LCADetail for product specific LCA BIM creation to use in
- LCADesign eco-profiling of buildings, developments, cities etc

and with partners create:

- Bespoke Country Inventories to allow e.g. LCADesign UAE, Singapore, USA etc





Participating Organisations

Private Industry	Government and Industry Development	Research and Education
          <p>RLB Rider Levett Bucknall</p>  	                	      

Sustainable Built Environment National Research Centre

selected room

Benchmark data for selected room

Properties	Values	unit
Object_ObjectType		nothing
Space_ElevationWithFlooring		nothing
Space_InteriorOrExteriorSp...	INTERNAL.	nothing
SpatialStructureElement_Co...	ELEMENT.	nothing
SpatialStructureElement_Lo...	'Foyer'	nothing
currentBPIValue	4.745012	nothing
currentCleaningValue	9.759183	nothing
currentEnergyUsage	6195.482	nothing
previousBPIValues	5.65677	nothing
previousCleaningValues	9.298821	nothing
previousEnergyUsage	6184.795	nothing
shortName		nothing
spaceBPI		nothing
spaceCleaningIndex		nothing

Properties of the selected room

Cleaning index history

Energy consumption history of selected room

current benchmark data for ...

units
4.745
9.759

cleaning history of OS_hyeAMr0NeAscPt_GVUt

units
9.298
8.803
3.537
6.987
5.783
4.918
7.291
5.257
7.371

Energy history of OS_hyeAMr0NeAscPt_GVUt

units
6,184.7
8,850.798
7,707.782
7,030.8
6,098.8
9,533.8
8,503.034
6,683.1
8,742.8
7,659.8
8,938.899
7,467.4
9,280.822
8,938.8595
7,383.551
6,991.2
6,356.546

last e...

units
6195.482

BPI history of OS_hyeAMr0Ne...

units
5.656
6.628
3.382
6.922
5.46
1.162
3.932
8.872
7.562
3.15



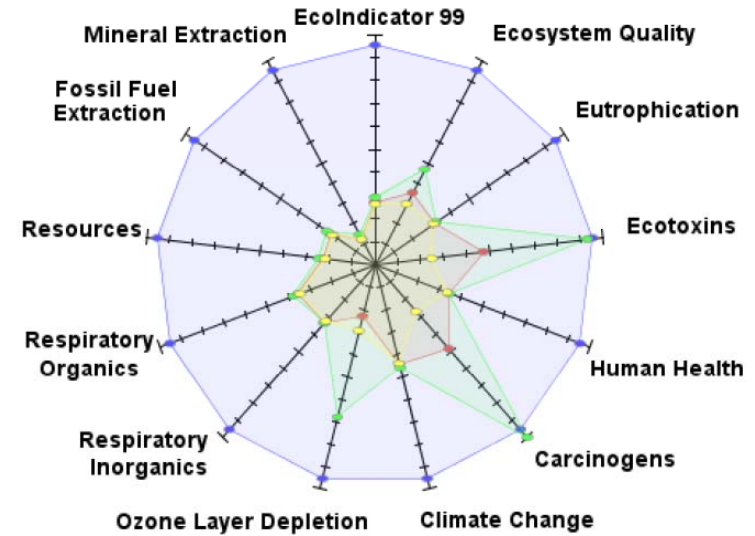
Supermarket all elements

Rapid BIM Ecoprofiling Software

•Base Building 20 yr
•Operating energy & Water

Inventory

- Default
- Colorbond, steel frame, insul
- 250 UC Universal Column
- Fixed framed windows 6mm
- Fibro-cement, pine frame, in
- 25 MPa concrete strip footin
- 32 Mpa concrete encased steel - 2 storeys
- EP-32 Mpa concrete encased steel - 2 storeys
- 200 UC Universal Column
- Ceiling suspended-1200x600 plasterboard painted
- Vitrabond, pine frame wall
- 150 UC Universal Beam
- Metal deck
- Dual F
- 250 U
- Concr
- Concr
- Glazed
- Sold t
- Sold t
- Concr
- Stand
- 200 U
- No In
- Bul
- Bul
- Bul
- Bul



Human Health Resource Depletion and Ecosystem Damages

Operational

- Design Life 20
- Meter Reading Water Usage
- Meter Reading Electricity Usage
- Meter Reading Diesel Usage
- Meter Reading Town Gas Usage
- Meter Reading Natural Gas Usage
- Meter Reading LPG Usage
- Gross Floor Area 3124

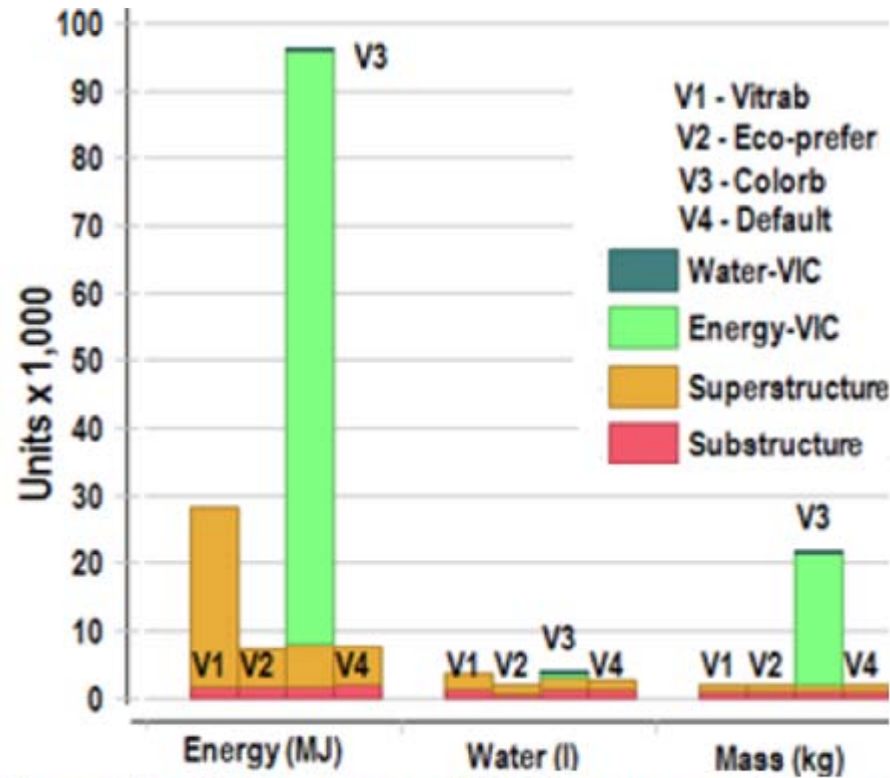
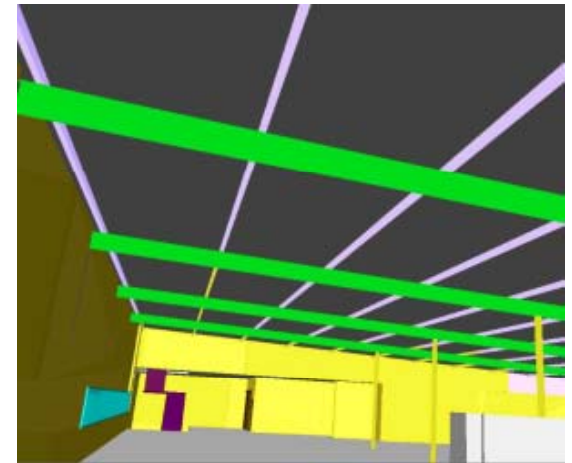
Material Type: Inventory Operational

Property	Value
Name	Electricity Usage
Units	MJ/year
Usage	48399.0

1 View of Supermarket Building Information Model, Settings & Tagged Wall



Operations Vs Embodied 20 yr



Energy for lights, power, HVAC, Ovens & refrigeration

ecospecifier global
GREEN TAGTM
CERTIFIED



The 'Beyond LCA' Rating Certification program for
all Green Building Materials ...

Facilitating next generation productivity

