



# ISv2.0 Materials Calculator Guideline



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# INTRODUCTION

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## Introduction

This document explains the methodology behind the IS v2.0 Rso-6 credit: Materials Life Cycle Impact Measurement and Reduction, ISv2.0 Rso-6 and the IS Materials Calculator in the Resources Category of the Infrastructure Sustainability (IS) rating scheme version 2.0 developed and administered by the Infrastructure Sustainability Council Australia (ISCA).

The IS Materials Calculator evaluates environmental impacts in relation to use of materials on infrastructure projects and assets. It should be used in conjunction with the Rso-6 credit in the Resources Category of the ISv2.0 rating scheme.

## Background

The global demand for resources is forecasted to rise significantly this century. Increasing our resource efficiency (or 'eco-efficiency') is not only an environmental issue but will be vital to ensuring long-term economic prosperity for the global economy.

Infrastructure construction and operation has implications for materials selection and use. Infrastructure uses a large quantity, but relatively small number, of key materials in a myriad of combinations and dimensions from different sources powered by different energy grids etc. In addition, there may be different implications for structural design of some infrastructure based on location and climate. For many infrastructure projects/assets the transport of the materials and hence their sourcing is highly significant. Equally, there are often many opportunities to reuse materials locally that would otherwise have ended up in landfill.

## Purpose

The primary purpose of this document is to provide guidance to assessors who are preparing evidence and supporting documents as part of their self-assessment submission.

This document aims to:

- Provide guidance to other users of the ISv2.0 Materials Calculator.
- Provide background information on the development of the ISv2.0 Materials Calculator.
- Supplement the existing guidance in the IS Technical Manual for the Rso-6 credit.

## IS RATING SCHEME – MATERIALS

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### Materials category objective

The broad objective of the Materials credits of the Resources category is to minimise the consumption of precious resources, optimise resource efficiency and reduce the environmental impacts of infrastructure through life cycle (cradle-to-cradle) thinking. This approach encourages a move towards a scenario where natural resources are consumed no faster than the planet can replenish them and environmental pollution is released at a rate that is within the earth's carrying and rejuvenating capacity.

### The credit for materials lifecycle measurement and reduction

The Rso-6 Credit: Materials Life Cycle Impact Measurement and Reduction uses a Materials calculator to assess the lifecycle impact of materials use on a project/asset. The user enters product quantities and transport distances in the calculator to compare the impact of a project/asset's material use with a base case (reference case) for a range of materials. The aim of this credit is to reward the reduction of life cycle environmental impact of materials.

By completing the relevant sections of the calculator for a base case and then for the actual case, the reduction in environmental impact achieved (measured as IS EnviroPoints v2) determines the respective level achieved in the Rso-6 credit:

- **Level 1:** Measurement of impact (but no reduction).
- **Level 1 to 3 on a sliding scale:** A reduction in environmental impact of 0 to 30% achieves Level 1 to 3 on a sliding scale. Fractions of levels are allowed under the IS rating scheme since Version 1.2 (but not for earlier versions). See later in this guideline for details.

See the IS rating scheme Technical Manual 'Base Case' section for more details on the base case approach.

The IS Materials Calculator provides a level playing field assessment tool for the embodied material impacts. The calculator can be used to inform design to use resources more efficiently and select lower impact materials and product options.

# LIFE CYCLE ASSESSMENT – THE BASIS FOR THE IS MATERIALS CALCULATOR

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## Introduction

Life cycle assessment (LCA) is a methodology used to estimate the overall environmental impact of materials or products over their lifecycle. LCA is the only method that assesses the environmental impacts of a product or activity (a system of products) over its entire life cycle. The IS Materials Calculator takes into account the “embodied” environmental impacts (IS EnviroPoints v2 and GHG emissions) associated with materials used in a project, which covers:

- Extraction and treatment of raw materials
- Product manufacturing
- Transport and distribution
- Construction processes (use of temporary materials (e.g. access roads) during construction)
  - Energy use during the construction phase is dealt with in the Ene category of the IS rating scheme.
- Use / Operation of an asset (use of materials for maintenance and replacements during the service life of an asset)
  - Energy use or energy production during the operational phase is dealt with in the Ene category of the IS rating scheme.
- End of life is not included in the Materials Calculator, but is considered in Rso-4 and Rso-5.

LCA is used to measure the environmental impacts across a product’s life cycle and to help avoid burden shifting between life cycle stages and/or types of environmental impacts. This means minimising impacts at one stage of the life cycle, or in a geographic region, or in a particular impact category, while helping to avoid impact increases elsewhere. For example, reducing the volume and impact of the initial construction materials, but with higher operational and maintenance impacts.

The main goal of LCA is to lessen the environmental impacts of products and services by guiding the decision-making process.

## Australian construction products life cycle data sources

The IS Materials Calculator includes calculated embodied environmental impact factors for the “cradle to manufacturer gate” for a wide range of typical construction materials. The transport component from the manufacturer’s gate to the “project/asset (entry) gate” can vary significantly between projects/assets, so the IS Materials Calculator also includes the option to enter the transport component for each material or product.

The IS Materials Calculator is based on the best available data from Australian life cycle inventory databases in the following order (hierarchy):

1. Environmental Product Declarations (EPDs) - EPDs are registered documents that provide relevant, verified and comparable information about the environmental impact of goods and services. They are based on LCA methodology, and in Australia and New Zealand EPDs of construction products registered with the Australasian EPD Programme comply with the EN 15804 standard.

2. Australian National Life Cycle Inventory Database<sup>1</sup> (AusLCI), the national, publicly accessible database managed by the Australian LCA Society (ALCAS). Currently AusLCI contains a limited set of construction products.
3. The AusLCI “shadow database”, a database managed by ALCAS to fill most of the gaps in the supply chain not covered by the AusLCI database. The shadow database is mostly based on European processes, though modified with Australian data for energy and transport, and is consistent with AusLCI in scope and methodology. When new AusLCI processes become available, they replace the current shadow database process, thereby continually improving the overall quality of the LCI data.

The above databases and information sources are developed following the ISO 14040:2006 and ISO 14044:2006 standards for LCA.

## Life cycle environmental impacts assessment – IS EnviroPoints v2 explained

From version 2.0 of the IS Materials Calculator, a new impact assessment methodology is applied. On the surface, this change might not be directly visible to the user because the environmental indicators have not changed from v1.2. What has changed is the underlying impact assessment methodology. The IS Materials Calculator v2.0 has been brought in line with the impact assessment methodology that is stipulated in EN 15804 for use in EPDs of construction products. This is similarly mandated by the Green Building Council of Australia (GBCA) when undertaking an LCA in Green Star rating scheme. Furthermore, this methodology aligns well with the life cycle inventory databases (such as AusLCI) that are being used in the calculator.

The change in impact assessment models can have a profound impact on the values (“emission factors”) for the indicators. In the IS rating tool, this is especially the case for photochemical oxidation and abiotic depletion. For global warming and acidification, the change is only minor. The models for eutrophication and ozone layer depletion have not changed. For each stage of the life cycle, the agreed methodology for the environmental impact assessment (IS EnviroPoints v2) is based on the impact assessment method mandated by the EN 15804 and EN 15978 standards for ‘Sustainability of construction works’ and adopted by the Australasian EPD Programme for construction products. The indicators in v2.0 are identical to the mandatory indicators currently required by the GBCA’s Green Star LCA credit. For the purpose of the IS Materials Calculator v2.0, the indicators still undergo a normalisation and weighting step. This approach converts the discrete environmental impacts of each product into a single indicator score (IS EnviroPoints v2; see Figure A) that simplifies comparison with other products:

1. **Classification:** Each of the compiled inputs and outputs are classified into the category of environmental impacts that they contribute to. See Appendix A for description of each impact category included.
2. **Impact characterisation:** All inputs and outputs are then measured for their potency, and the sum of contributing impacts is expressed in an appropriate unit (e.g. kg CO<sub>2e</sub> for global warming potential).
3. **Normalisation:** The category impacts are then normalised by expressing them as a percentage of the annual average global per capita impact (for that category). So, if a product takes 3 kg Sb-equivalents of resources to produce, and the average annual consumption of a global resident is 300 kg Sb-equivalents, then the normalised impact is  $3/300 = 1\%$ .
4. **Weighting:** Each category is weighted according to their relative value for the region where the end product is being used (i.e. Australia). The weightings are determined by an aggregation of

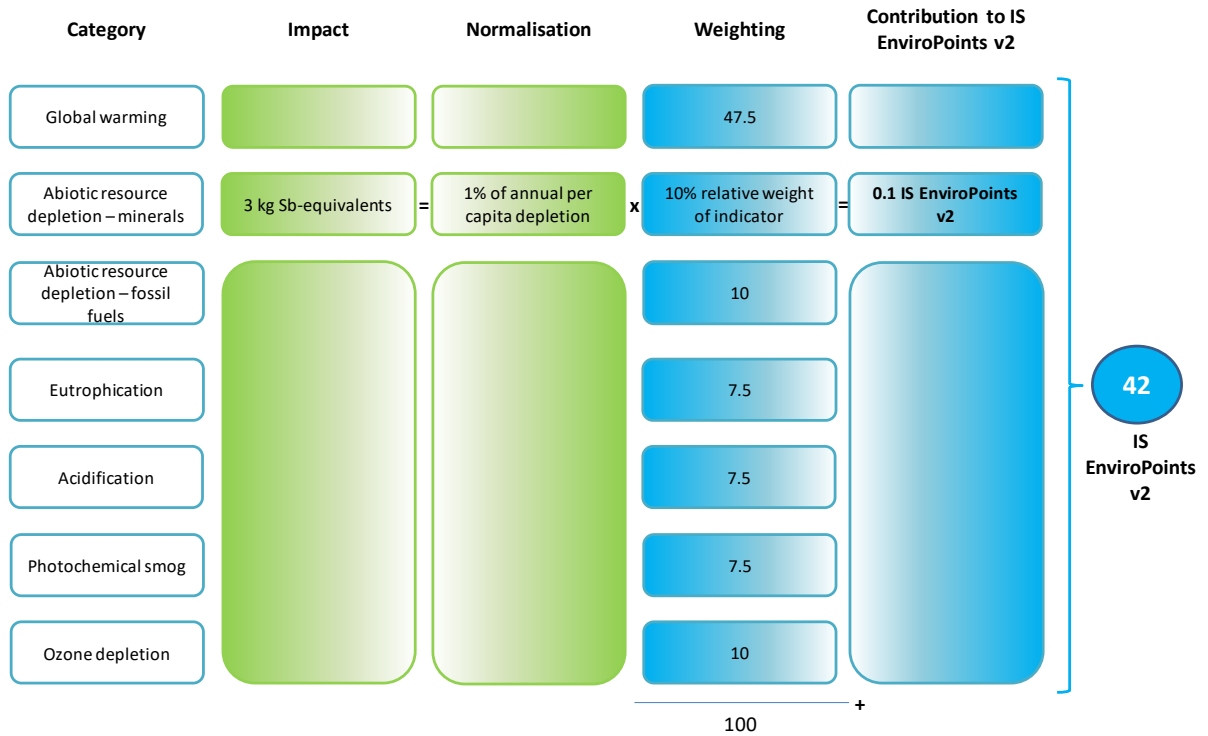
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<sup>1</sup> See: <http://alcas.asn.au/AusLCI/>



particular Australian stakeholders' opinions<sup>2</sup>. The weighting values have been recalibrated to ensure the seven categories add up to 100 IS EnviroPoints v2 (see Figure A). The weighting values are displayed in Appendix A and in the IS Materials Calculator.

**Figure A: Illustration of the IS EnviroPoint v2 Assessment**

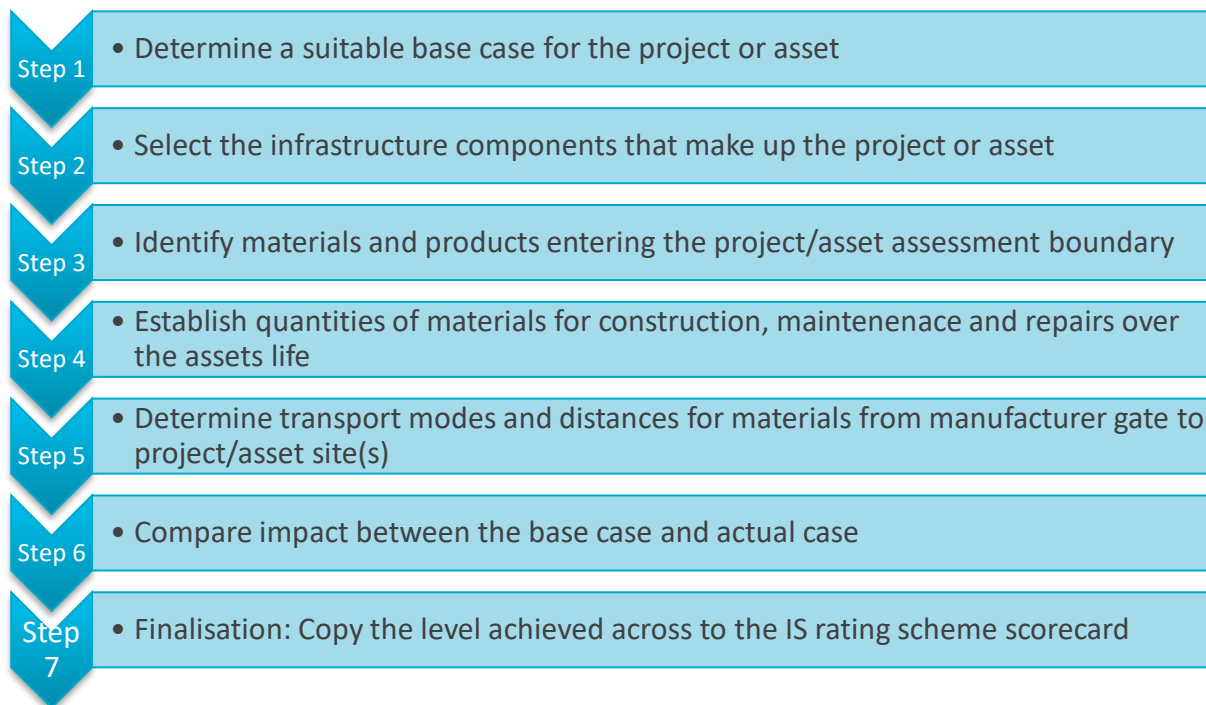


<sup>2</sup> Building Products Innovation Council (BPIC), 2010c, Weighting of Environmental Impacts in Australia, last viewed 01 February 2016, <http://www.bpic.asn.au/lci/guidance-materials/weightings>.

## HOW TO USE THE MATERIALS CALCULATOR

The IS Materials Calculator includes user instructions for calculating the IS EnviroPoints v2 (and greenhouse gas emissions) footprint of the base case and actual case. Figure B explains the overall approach.

**Figure B: Steps for using the IS Materials Calculator for the base case and actual case**



### Step 1 Determine a suitable base case for the project or asset

For Design and As Built ratings, this is a suitable, early design accepted by key stakeholders as being representative of the original concept for the infrastructure development and using business-as-usual (BAU) technologies and assumptions. For Operation, the base case (or baseline) is typically based on a representative historical year(s). The base case must be verified early in the assessment process with ISCA. For more information on the Base Case (or Reference Design) approach, see the IS Technical Manual 'Base Case section.

Steps 2 to 5 need to be undertaken first for the base case and then for the actual case.

### Step 2: Select the infrastructure components that make up the project or asset

On the Home worksheet, under the Base Case heading, select the infrastructure components that make up the project or asset. For simple projects/assets there is likely to be just one component, while for a more complex project/asset there may be a number of components that make up the project/asset. For example, a motorway project/asset may include the roadway itself, a tunnel, a cycle path and a bridge. For each infrastructure component, select the relevant sub-component and then fill in the quantities of this sub-component in the project/asset (measured in the units indicated). The quantities required will depend on the components selected. For example, for a roadway, the parameters are the length of road and the number of lanes.

## Operations stage and infrastructure life

When selecting the infrastructure components as part of this step, consider the full lifecycle of the infrastructure including the operational stage out to the appropriate design life. The impact of materials and products selected during the operational stage is a key consideration for minimising environmental impact and must be entered into the designated worksheet within the materials calculator. For example this may include but is not limited to:

- Repairs and replacement of materials (e.g. new or replacement asphalt or pavements)
- Use, maintenance and repairs of products (e.g. replacement fencing, drainage or footpaths)
- Purchase of raw materials (e.g. chemicals for water treatment, timber, landscaping)
- Transportation of above materials

As an example, the road operations stage can be significant to the infrastructure life cycle and the materials used during the operational stage need to be considered in the materials calculations. Relevant activities during the operation stage may include pavement rehabilitation and/or replacement, maintenance, landscaping works, sign replacements and barrier installations.

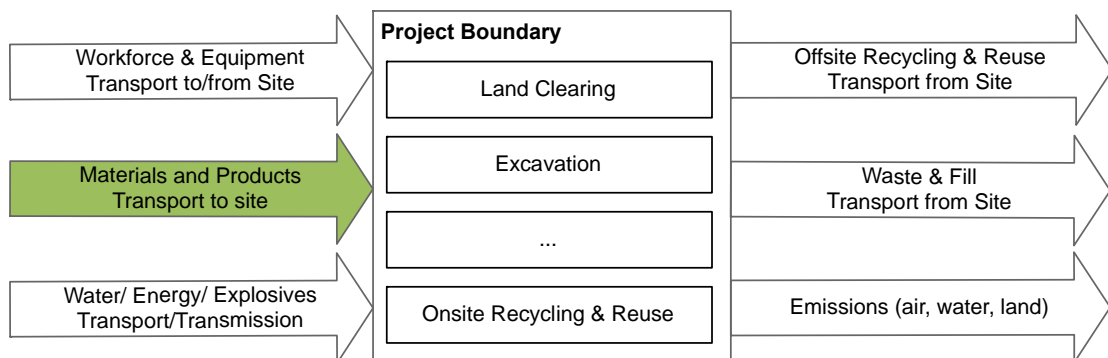
The impact for the operation of a road can be significant and as a result the selection of sustainable materials can provide significant savings in operational energy and maintenance requirements.

## Step 3: Identify materials and products entering the project/asset assessment boundary

The Materials Details worksheets can be accessed by clicking on the 'Detail' button within each component area or simply clicking on the relevant worksheet tab. For each infrastructure component, select those materials used on the project/asset. If a particular material type is not used then don't fill in that section. For each material type, select the specific material from the drop-down lists. Only materials/products entering the project boundary (and their transport) should be accounted for. For example, reused or recycled materials from within the project/asset boundary should not be included in the calculator (i.e. these are treated as 'bonus' materials by the calculator, thus encouraging internal reuse and recycling). Other project inputs (e.g. water, energy) and outputs (e.g. waste and emissions) are included in other IS rating scheme credits, and are thus accounted for elsewhere within the tool. For each infrastructure component selected, you will need to complete the detailed materials information for both the Base Case and the Actual Case.

Materials and products used for construction and operation of the infrastructure must be identified i.e. the whole infrastructure lifecycle must be addressed.

**Figure C: Steps for using the IS Materials Calculator for the base case and actual case**



#### **Step 4: Establish quantities of materials for construction, maintenance and repairs over the infrastructure life**

Enter the quantities of each material used. Quantities may be sourced from bill of materials and estimator or quantity surveyor calculations. If necessary, convert the quantities to the units used in the Materials Calculator (typically mass but other common units are provided for several materials). Standard densities for conversion between volume and mass or vice versa are included in the calculator. Quantities of materials used for maintenance and repairs should be entered in the designated worksheet for Operational impacts.

#### **Step 5: Determine transport modes and distances for materials from manufacturer gate to project/asset site(s)**

The calculator has programmed typical embodied impacts for materials and products up to the manufacturer's gate. In order to account for the environmental impact of transport from the manufacturer gate (e.g. production site or quarry) to project/asset site, the user needs to establish and include the transport modes and the transport distances (km) to get the materials to site. Note that the user must enter the one way distance – the factors in the calculator already include return trips and suitable assumptions about back-loading.

For most projects/assets the user needs to make reasonable assumptions for transport distances and modes. The environmental impact from transport is typically most significant for high volume/mass materials such as concrete, aggregates, sand and fill. It is therefore most important to note differences between the base case and actual case for these products and materials.

The calculator supports one or two transport legs per material.

When a transport task has been entered, the impacts of transport are now shown within the calculator (to the right of the data entry sections). The calculator can thus be used to optimise the environmental impacts of transport. Varying the transport mode will result in a decrease or increase of IS EnviroPoints v2 and GHG emissions, indicating an improvement or worsening of environmental impacts.

#### **Step 6: Compare impact between the base case and actual case**

If you wish to copy the Base Case data to the Actual Case data then click on the 'Copy to Actual' button (repeat this step for each component). This can be a good starting point for investigating suitable design changes.

As the materials details are completed, the environmental impact expressed in terms of IS EnviroPoints v2 (and GHG emissions) is calculated. Once all Materials Details are completed, press the "Home" button (or select the Home tab) to return to the Home worksheet and compare the Base Case and Actual Case results. The calculator quantifies the difference between the environmental impact of the Base and Actual Case and determines the level achieved for the Mat-1 credit (shown in the top right hand corner of the Home worksheet).

Just measuring the environmental impact achieves Level 1 in the Rso-6 credit, while a reduction in environmental impact (IS EnviroPoints v2), compared to a base case, of 0 to 30% achieves Level 1 to 3 on a sliding scale. Fractions of levels have been allowed under the IS rating scheme since Version 1.2 (see Figure D). For example, a 10% reduction would achieve  $\text{Level } 1 + (10\% / 30\%) \times (3 - 1) = \text{Level } 1.67$ . This sliding scale approach provides encouragement to pursue every reduction opportunity possible. Reductions beyond 30% may be awarded innovation points.

The calculator can be used as a design tool at this point by adjusting the materials and quantities in the Actual project/asset and observing the difference this makes to the overall environmental impact. Note that the level achieved is determined only from the IS EnviroPoints v2 (which includes GHG emissions

as one of the seven impact categories). The GHG emissions are shown separately in the calculator simply because this information may be useful to the project/asset. The difference between the base and actual case footprints should be explained in the credit summary form by describing the key changes and their impacts in terms of reductions or increases in materials environmental impacts. The Materials Calculator v2.0 contains an interactive waterfall chart and hot-spot diagrams to assist users in analysing differences between the base case and actual case (see example in Appendix B).

### Step 7: Finalisation: Copy the level achieved across to the IS rating scheme scorecard

Copy the level achieved across to the IS rating scheme scorecard. Save a copy of the Materials Calculator and a printed copy of the Home worksheet and Charts worksheet (signed by a suitable project representative as being an accurate and representative record) for use as evidence with the rating submission. Provide suitable calculations and materials tracking data as background evidence also.

**Figure D: Benchmarks for Different IS rating scheme Versions**

Benchmark Requirement	Version 1.1	Version 1.2 / Version 2.0
<b>Level 1</b>	Measurement of impact (but no reduction)	A reduction of 0 to 30% achieves Level 1 to 3 on a sliding scale. Fractions of levels are allowed.
<b>Level 2</b>	A reduction of between 15% - 30%	
<b>Level 3</b>	A reduction of > 30%	

## FREQUENTLY ASKED QUESTIONS

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This section includes some typical questions and answers regarding the IS Materials Calculator. Questions not answered in this section can be directed to ISCA at: [info@isca.org.au](mailto:info@isca.org.au)

### **Q1: Do we have to use the IS Materials Calculator to determine the level achieved in Rso-6?**

A1: The IS rating scheme allows for use of equivalent LCA techniques upon agreement with ISCA (through submission of a Credit Interpretation Request). This may be specifically suitable for projects/assets where an ISO 21930 compliant LCA is being undertaken and independently verified to comply with the IS EnviroPoints v2 method.

### **Q2: Our project uses materials with higher/lower impacts than what is used in the IS Materials Calculator. Can and should we use manufacturer specific LCA impact factors if available?**

A2: The IS Materials Calculator is built around (Australian) average environmental impact profiles, primarily based on data from EPDs, the Australian Life Cycle Inventory (AusLCI) database and its shadow database. When available, it is recommended that manufacturer specific data are used. The Materials Calculator v2.0 allows manufacturer specific information to be entered when presented through a verified (Australasian) EPD.

The project can also seek credit under Rso-7 for specific products with environmental certifications.

### **Q3: Why doesn't the calculator differentiate between where and how my product is produced?**

A3: The IS Materials Calculator v2.0 includes generic Australian construction product life cycle data. The aim of the IS Materials Calculator is to provide a level playing field assessment tool of the embodied material impacts. The IS Materials Calculator can be used to inform design and decision making to use resources more efficiently and select lower impact materials and product selections. Users have the option to apply specific factors for materials and products, provided these factors come in an accepted format: EN 15804 compliant Environmental Product Declarations (EPDs). Furthermore, users can define the additional transport associated with the source of a material or product, including when this is from overseas.

The project can also seek credits under Rso-7 for specific products with environmental certifications.

### **Q4: What should I do if I use up all of the slots within one material type e.g. steel for a project/asset component?**

A4: Use a new project/asset component (select the same component and sub-component types) and then enter the relevant data in the relevant base case and actual tabs.

## **Q5: How should materials recycled within the project/asset be handled by the calculator? What about materials from outside the project/asset being reused on the project/asset?**

A5: Materials recycled or reused within the project should not be included as a material input if processing occurs on-site (see step 3 under the section How to Use the IS Materials Calculator), as these materials are unlikely to contribute any significant environmental burden. However, should you wish to include the volume of materials recycled or reused within the project so that this information is captured in the calculator, then we recommend selecting a secondary material, such as “general fill” in the Aggregates section, as these materials come free of burden. In the comment box you can then clarify that these are materials that are recycled or reused within the project boundaries.

Reused materials, sourced outside of the project/asset and not requiring additional processing are also considered burden-free. We have added more secondary materials to the calculator, with a view of making it easier to capture these materials and account for any transport to site. Similar to materials recycled or reused on-site, users should select a secondary material for externally sourced reused materials. This will then allow you to add transport of the reused material to site. In the comment box you can clarify that this data entry refers to materials that are reused from outside the project boundaries and provide relevant details. The calculator includes some common recycled materials (sourced from outside the project/asset). For example, there is an option for recycled crushed concrete/masonry under the category Aggregates, allowing for the additional processing to produce crushed concrete/masonry. Transport to site should be included for these materials.

ISCA has made improvements to the handling of recycled and reused materials in the latest version of the Calculator. Nonetheless, ISCA always appreciates feedback and suggestions for further improvements to the calculator.

## **Q6: Can I get embodied/embedded energy information out of the calculator?**

A6: No, although the IS Materials Calculator accounts for non-renewable energy resource depletion as one of the components of the IS EnviroPoint v2 factors. Embodied energy is not reported specifically, rather the IS EnviroPoint v2 method captures the broader environmental implications of energy use, such as global warming, photochemical smog, acidification, eutrophication and resource depletion, all likely to relate to embodied energy (especially for combustion of fossil fuels).

## **Q7: What is the difference between ‘IS EnviroPoints v2’ and ‘IS EnviroPoints’ that were used in previous versions of the calculator?**

A7: One of the most significant changes in the Materials Calculator v2.0 is an update in the underlying LCA methodology. Although the impact categories are largely the same as in version 1.2, the impact assessment methods have changed to align them with other initiatives. The indicators used in the IS Materials Calculator are now the same as the indicators seen on construction product EPDs (compliant with EN 15804), allowing EPD results to be entered directly into the calculator. The indicators also align with the mandatory indicators reported under the Green Star LCA credit.

**As a result of this change, IS EnviroPoints v2 are completely different from IS EnviroPoints and cannot be compared.**

See Q12 for more details on the IS EnviroPoints v2.

**Q8: Can I get new materials added to the calculator and if so, what is the process?**

A8: Suppliers (or manufacturers) of infrastructure materials and products can have their environmental information incorporated into AusLCI<sup>3</sup>, which would make it eligible for inclusion into future updates to the IS Materials Calculator. Where possible, data should be provided at industry level as the IS Materials Calculator predominantly covers industry average material profiles. This process was undertaken to add LCI data for asphalt products and geopolymers concrete pipes. Key industry stakeholders submitted relevant data to ALCAS, who then assured the data meet AusLCI requirements.

If a material has EPD data, contact ISCA as they may be able to add their branded product to the Materials Calculator for a small fee.

**Q9: Can I enter both default and custom concrete data?**

A9: Yes, we made the option to enter either default or custom concrete data available in version 2.0 of the calculator.

If you have access to details for some concrete mixes but not for others, then you can use the “Define custom mix designs” section to enter the available details, as well as the “Default concrete compositions” section (to inform the mix designs for which you don’t have specific details).

**Q10: Why can’t I see a detailed breakdown of each environmental indicator for concrete?**

A10: As concrete results are calculated based on a more complex set of formulas that consider the concrete composition and thus specific emission factors; we can't be as transparent as with the other materials unfortunately. Future updates of the calculator might introduce this additional detail.

**Q11: How do I enter the mass of cabling components?**

A11: The mass of cabling components, like for any material, should be entered as the mass of the product without packaging (i.e. cable drums). You can find the mass of cables - typically expressed in kg per 100 m or kg per km - in product brochures available from most suppliers.

**Q12: What are the details of the IS EnviroPoints v2 categories?**

A12: The IS EnviroPoints v2 used in the calculator represent a single score created from seven environmental impact categories as per Figure E.

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<sup>3</sup> The procedures for adding data to AusLCI are published here: <http://alcas.asn.au/AusLCI/index.php/Publications>



**Figure E: IS EnviroPoints v2 categories**

Indicator	Description	Relative Weight IS EnviroPoints v2
<b>Global warming</b>	The increase in the overall temperature of the earth's atmosphere, attributed to the greenhouse effect caused by increased levels of carbon dioxide, methane, and other greenhouse gases.. Global warming (or climate change) results in an increase in extreme weather events and sea level rise.	47.5%
<b>Ozone depletion</b>	The degradation of the ozone layer in the Earth's stratosphere. The depletion of the ozone layer increases the amount of UVB that reaches the Earth's surface. UVB is generally accepted to be a contributing factor to skin cancer, cataracts and can cause damage to some marine organisms, plants, and plastics.	10.0%
<b>Acidification</b>	An atmospheric process whereby (sulphur (S) and nitrogen (N) based) pollutants are converted into acidic substances, which upon deposition may exceed the natural neutralising capacity of soils. Common outcomes of acidification are a decline of (coniferous) forests and increased fish mortality in lakes and rivers. It can also lead to increased toxic metal leaching, accelerated corrosion of metals, and degradation of concrete and limestone structures.	7.5%
<b>Eutrophication</b>	The potential to cause over-fertilisation of water and soil, which can result in increased growth of biomass. In water, this can lead to oxygen depletion, as well as significant impacts on water quality, affecting aquatic and plant life.	7.5%
<b>Photochemical smog</b>	Photochemical smog, also known as summer smog, is a type of secondary air pollution formed in the troposphere that is caused by a reaction between sunlight, nitrogen oxide and hydrocarbons. This is a known cause for respiratory health problems and damage to vegetation.	7.5%
<b>Abiotic resource depletion - elements</b>	Mineral resources are key raw materials in many industrial sectors. The depletion of functions that natural resources have for the economy is sometimes considered an economic problem, rather than an environmental problem. This indicator measures the decreasing natural availability of abiotic natural resources (elements and minerals).	10.0%
<b>Abiotic resource depletion - fossil fuels</b>	Mineral resources are key raw materials in many industrial sectors. The depletion of functions that natural resources have for the economy is sometimes considered an economic problem, rather than an environmental problem. This indicator measures the decreasing natural availability of abiotic natural resources (fossil fuels).	10.0%

The indicators that are reported in the Materials Calculator v2.0 are fully aligned with the mandatory indicators currently required by the GBCA's Green Star LCA credit, which are based on the EN 15804 and EN 15978 standards for 'Sustainability of construction works'.

Please ensure that you are working with the latest release of the IS Materials Calculator. The calculator will be updated when required to incorporate improvements and to account for innovation and new data on infrastructure product/material. The release date of the calculator is shown on the "Home" worksheet. Registered projects/assets are permitted to use the release which was current at the date of registration, or later releases. Earlier released versions must not be used.

To check for the latest release of an IS Materials Calculator, please visit the ISCA website <http://www.isca.org.au>. Details of changes made to each release of an IS Materials Calculator can be viewed in the "Changelog" worksheet.