



4. Materials Element of EnviroDevelopment

TITLE:	Materials
OBJECTIVE:	Environmentally responsible material usage
TARGET:	Development that predominantly utilises environmentally responsible materials to lower environmental impacts in preference to other materials when such options are available and feasible, without significantly jeopardising the functionality or liveability of the development.

PRINCIPLES

- Encourage selection of materials from environmentally responsible sources such as:
 - reuse resources (including buildings, structures and materials)
 - use recycled resources (e.g. materials)
 - renewable sources
 - non-polluting sources
 - low lifecycle energy materials (i.e. encourage choice of materials that are not energy-intensive to produce, are locally available and durable)
 - materials that are non-toxic and do not liberate toxic gases or dangerous particles
- Decrease use of less environmentally responsible materials
- Encourage high indoor air quality through choice of materials
- Maintain design and performance standards
- Encourage use of materials that can be recycled or reused at the end life of the development
- Maintain affordability within reasonable parameters

POTENTIAL BENEFITS AND INCENTIVES

Benefits for Occupants

- Satisfaction that occupier is reducing ecological footprint through reduced greenhouse gas production, reduced pollution and/or reduced detrimental impacts on ecosystems
- Comfortable, safe living areas with health benefits through reduced toxic surfaces or gases and reduced allergens
- Pride about environmentally friendly housing choice
- Lower lifecycle energy materials may be more durable
- Enhanced marketability and property value
- Reduced operating costs and ongoing maintenance costs

Benefits for Local, State or Federal Government or Supplier Companies

- Energy efficiency leading to reduced greenhouse gas production and reduced pollution, which in turn can lead to a more liveable environment and help reduce climate change
- Advantage suppliers that source materials or inputs from renewable sources (e.g. sustainable timber or other organic sources), or produce materials through recycling or other environmentally friendly processes.
- Encourages recycling and reduces landfill
- More attractive and sustainable city/shire/state
- Helps raise community awareness of government's efforts to enhance sustainability

- Helps raise community awareness of the need to protect the environment and use resources responsibly
- Health benefits from better indoor air quality and reduced toxic products
- Reduction in resource consumption
- Help to reduce the ecological footprint of communities

Benefits for Developers

- Marketing advantages through quality product and EnviroDevelopment promotion
- Product differentiation
- Improved corporate image
- More affordable environmentally responsible material choices through economies of scale
- Some government incentives may be possible through helping to reduce climate change
- Lower lifecycle energy materials may be more affordable than some others due to lower energy inputs in production or transport etc.

REQUIREMENTS

Criteria	Notes on evidence to be provided to Board of Management for approval prior to certification as an EnviroDevelopment
4.1 ESSENTIAL ACTIONS Must meet the criteria from the following sections: <ul style="list-style-type: none"> • Environmentally responsible materials (4.2) • Non-toxic materials (4.3) • Local products (4.4) • Minimise packaging (4.5) 	Meet the evidence requirements of each section.
4.2 ENVIRONMENTALLY RESPONSIBLE MATERIALS Minimum 20% construction (by volume) made from either (or a combination of): <ul style="list-style-type: none"> • Reused resources (4.2.1) • Materials with high content of recycled material (4.2.2) • Sustainable, renewable sources (4.2.3) • Materials with lifecycle energy at least 30% lower than standard alternative product fulfilling a comparable purpose (considering extraction, production transport and durability) (4.2.4) • Responsibly sourced and manufactured materials (4.2.5) 4.2.1 Reused Resources and Recycled Materials The recycled content can be achieved through: <ul style="list-style-type: none"> • Reused structure or façade, etc. • Reuse of products such as steel or timber • Choice of materials that have a high recycled product content Note: If a material contains less than around 50% recycled content then it will need to contribute a higher portion of the building pro rata i.e. a material of 25% recycled content would need to make up approximately 40% of the building materials to totally fulfil this requirement.	Evidence in plans and statement from engineer, architect or building designer and developer. Evidence should include a statement from developer explaining what was reused and/or what the recycled materials or sustainable materials were used for in the development. There should also be a statement from the developer and the supplier about the recycled content of materials. Include an indication of the proportion of the total materials used in the development which are materials of this category.

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<p>4.2.2 Sustainable, Renewable Materials</p> <p>Sustainable, renewable sources include materials that come from sustainably produced organic products such as sustainable forestry operations³, straw, sustainable bamboo plantations etc. They can also include other materials that are produced and recycled through an environmentally friendly (low energy usage, non-polluting etc) process.</p> <p>4.2.3 Total Lifecycle Energy</p> <p>Materials with lifecycle energy at least 30% lower than standard alternative product fulfilling a comparable purpose (considering extraction, production transport and durability).</p> <p>Where no suitable scientific data exists for total lifecycle energy components of particular materials, it would be expected that calculations be done factoring in:</p> <ul style="list-style-type: none"> • An estimation of the energy required in their production (embodied energy); • An estimation of the energy required for their transport (thereby advantaging local suppliers); and • An estimation of the longevity of the materials compared to alternative products (i.e. if a product is twice as durable and likely to be used for this purpose for twice as long then under this formula it can afford to utilise twice as much energy in its production and/or transport than alternative products and still have the same lifecycle energy estimate). <p>The lifecycle energy of a component should be evaluated by comparison to other products fulfilling a comparable role. For example, for a wall it should be per m² of wall area and for insulation it should be compared to other products that achieve the same R score.</p> <p>Note: This section may evolve over time to consider other attributes than life cycle energy costs, however limited data generally makes this unfeasible at this stage.</p>	<p>A statement should be provided from the developer outlining the mechanism by which materials qualify as being from sustainable, renewable sources. Appropriate certification (e.g. that timber comes from sustainable forestry practices) must also be provided where applicable.</p> <p>Include an indication of the proportion of the total materials used in the development which are materials of this category.</p> <p>Evidence for this section can include research documentation from research organisations (e.g. Universities, CSIRO) as to the specifications of materials having low lifecycle energy costs.</p> <p>Include an indication of the proportion of the total materials used in the development which are materials of this category.</p>

³ Sustainable forestry operations: timber is sourced from either an certified timber source or is accompanied by chain of custody documentation as evidence that the timber has been sourced from a legally harvested and sustainably managed forest.

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<p>4.2.4 Responsibly Sourced and Manufactured Materials</p> <p>Use of suppliers who produce responsibly sourced and manufactured materials. Materials from manufacturers who have sourced input materials from sustainable sources and have implemented cleaner production principles i.e. the manufacturing process involves minimal use of non-renewable energy and water and either there are no polluting by products or such by products are significantly reduced. To qualify, products should be from manufacturers who certify (or ideally have externally certified) that their product manufacturing process uses less than 70% of the water or fossil fuel energy and reduces wastes and polluting by-products by more than 30% compared to industry standards or major manufacturers producing comparable products. Note: to meet this requirement, materials making up 20% of the materials used must include materials used in at least 3 of the following categories:</p> <ol style="list-style-type: none"> 1. Framing 2. Roof 3. Flooring 4. External walls 5. Internal walls 6. Foundations 7. Staircases 8. Other 	<p>Evidence may include EMS certification/chain of custody certificate/or equivalent documentation certifying environmental benefits compared to industry standards (e.g. statement detailing manufacturing production compared to industry standards) from the manufacturer or supplier issued at either the production stage or both the production and extraction phases for each material as appropriate.</p> <p>Include an indication of the proportion of the total materials used in the development which are materials of this category.</p>
<p>4.3 NON-TOXIC MATERIALS</p> <p>Non-toxic and low emission products should be utilised in common areas and encouraged in private dwellings or commercial space and meet at least two of the following options:</p> <p>4.3.1 Use of non-toxic or low toxicity paints on >90% of all internal painted surfaces.</p> <p>4.3.2 Use of non-toxic or low toxicity floor coverings on >80% of all indoor covered floors.</p> <p>4.3.3 Use of low-toxicity sealants and adhesives etc. where possible.</p> <p>4.3.4 Select non-allergenic materials for furnishings where feasible.</p> <p>Note: Non-toxic products include those that do not emit VOC gases or other known toxic substances. Preference should also be given to reducing formaldehyde.</p>	<p>Statement from developer and architect and/or interior decorator as applicable, stating how this requirement has been met.</p>
<p>4.4 LOCAL PRODUCTS</p> <p>Developers have considered utilising local manufacturers and/or suppliers where possible, or utilise the most economical method of transportation with regard to fossil fuels.</p>	<p>Statement from developer outlining such consideration of local materials and suppliers.</p>
<p>4.5 MINIMISE PACKAGING</p> <p>Developers have, where appropriate chosen materials and suppliers that minimise and/or recycle packaging.</p>	<p>Statement from developer outlining such consideration of materials and suppliers that minimise and/or recycle packaging.</p>