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“Our targets for recycling, waste reduction and conservation of resources far exceed the regulatory standards. Our goal is zero waste manufacturing.”

PETER SHAFRON, GENERAL COUNSEL

Growing demands for energy conservation are leading to the increased use of products that require less energy in their production, and that are more efficient when they are installed. James Hardie fibre cement products are meeting both challenges.

Our research and development program includes a life cycle assessment of our fibre cement products, which considers factors associated with raw materials and their processing, manufacture, construction activities, use and eventual demolition and/or disposal, including the possibility of recycling in some way.

Our aim is to continuously improve the resource use and energy efficiency of our operations, and improve the environmental performance of our products. To achieve this, we implement management strategies and programs that:



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### **Use renewable and recyclable resources as raw materials**

The raw materials used in fibre cement production are abundant. The cellulose fibre is obtained from unbleached, plantation wood pulp and silica is ground from sand or crushed quartz rock.

Cement is the biggest contributor to the environmental impacts of fibre cement products, because of the energy requirements and emissions associated with cement manufacture. The cement industry continues to improve its environmental performance by introducing new, cleaner technologies.

### **Conserve water, resources and energy**

The water used in our plants is recycled numerous times and is neutralised before discharge. Some of our plants are now running closed loop water systems and we are investigating possible extension of this technology to more of our operations.

The major energy inputs in fibre cement production come from the cement content and the high-pressure steam curing of the product. Where possible, the steam is generated as a waste by-product from other industries. At one James Hardie plant, for example, excess refinery gas and natural gas are sourced from an adjoining oil refinery and used as boiler fuels for raising steam.

### **Minimise waste by recycling process materials**

Solid wastes such as trimmings and scrap, fine particles and reject green sheets are reintroduced as raw materials. Solid waste that can't be re-used is certified by authorities as non-toxic and non-hazardous material, that can be safely disposed of in a landfill or sold to be re-used as raw material in cement manufacturing.

### **Reduce pollution and protect the natural environment**

Dust emissions from the manufacture of the finished product are strictly controlled. For example, a wet ball mill is used to grind sand. Where possible, the dust created during the manufacture of our product is captured and recycled back into the manufacturing process.

Fine particles generated by sanding and grinding finished sheets are mechanically collected and processed before disposal.

Once they leave our plants, fibre cement building products are used in lightweight construction systems that are among the most energy efficient and environmentally responsible building systems available.

Fibre cement products are very durable and require little maintenance during their lifetime. The products have been in use for many years in residential and commercial building applications and do not suffer the traditional durability problems of timber or PVC-based cladding materials.

Although fibre cement products from demolished sites cannot be reintroduced into the manufacture of new material because they have been coated or painted, they are easy to separate from framing, and can be safely disposed of as landfill or as part of recycled roadbase material.