



Protocols for recycling redundant utility poles and bridge timbers in New South Wales

Case study 1



Office of
Environment
& Heritage



Turning used power poles into recycled timber

Of the two million wooden poles installed in New South Wales (NSW) to distribute electricity, 10,000 to 12,500 are declared redundant and replaced each year.

Traditionally, redundant wooden poles have been either left with land owners to be used as fence posts or firewood, donated to local government authorities and/or community groups to use in landscaping, or disposed of appropriately to landfill.

In 2008 the Department of Environment, Climate Change and Water NSW (DECCW), now the Office of Environment and Heritage (OEH), funded the Timber Development Association (NSW) to develop a protocol to increase recycling of redundant utility poles and bridge timbers in the state. This case study shows the application of the protocol by Integral Energy, a major NSW electricity distribution network manager and retailer.

Integral Energy operates a network that serves over 2.1 million people across 24,500 square kilometres within Sydney's Greater West, Blue Mountains, Greater Lithgow City and Rylstone Shire, the Illawarra and Southern Highlands regions. Electricity is provided to approximately 840,000 customers via 315,000 poles and 33,000 kilometres of overhead and underground cable.

With a commitment to environmental performance, Integral Energy recognised that many of the surplus wooden poles contained good quality timber that was suitable for recycling. A sustainable business opportunity has emerged, which could potentially generate revenue from the sale of the surplus wooden poles and greatly reduce costs associated with sending the poles to landfill.

Integral Energy partnered with Australian Architectural Hardwoods (AAH) to recycle the wooden poles in a manner that minimised the risks and maximised the benefits. Based in Kempsey on the NSW mid north coast, AAH has been manufacturing products from recycled hardwoods since 1993. Their modern facility is fully dedicated to recycled Australian hardwoods sourced from the deconstruction of structures all over the nation.

During the period 2007–2008 a total of 868 poles weighing 1,518 tonnes were diverted from landfill into recycling.



A number of Integral Energy poles reprocessed by AAH have been remanufactured into various hardwood products such as timber flooring and panelling.

Other recycled hardwood timbers have also been exported overseas or sold into the local marketplace.

The Process

Removal, assessment and storage pending collection

Before each pole is removed, an assessment is conducted by Integral Energy for the presence of preservatives and other problematic substances. Visual assessment is usually sufficient for the above ground part of the poles while pole butts may be subject to representative lab testing.

Individual poles identified as suitable for recycling are relocated and stockpiled in centralised locations pending their collection. AAH is contacted to arrange a collection when agreed quantities are met. Bulk collections are also arranged for major refurbishment projects and would in most cases include a collection directly from the project site.

Integral Energy explains: “Not all the poles are recyclable due to a high degree of degradation or possible chemical contamination. Non-recyclable poles and the pole butts are separated and transported to local licensed landfills.”

Storage, classification and processing

Poles are transported back to AAH’s dedicated recycling facility. AAH has a site environmental management plan which is strictly adhered to. Poles are stacked clear of the ground to avoid an increase in moisture content and to lessen any possibility of substances leaching into the ground. They are then graded into species and separated depending on the type of preservative treatment (if any).

Preservative treated poles are processed separately. The preservative treated sides are removed leaving the solid untreated core. Approximately 50–70 per cent of each pole can be recycled into high quality timber for resale. AAH’s view is that: “Once the poles have been milled, there is no trace of preservatives and you cannot tell that the timber is used wood. The poles are comprised of fine hardwoods such as Durability Class 1 or 2 Ironbark, Blackbutt and Spotted Gum.

Clearance of processing residues

Management of the preservative treated residues is a critical part of the process and was a key concern for Integral Energy. Larger offcuts which are treated with the preservative Copper Chrome Arsenate (CCA) are sold or donated for suitable applications. AAH provides assurance that such poles are not used for CCA restricted applications¹. Sawdust from processing CCA treated poles is collected in specially marked bins and disposed of at a local landfill in accordance with the *Protection of the Environment Operations (POEO) Act 1997*. Sawdust from processing untreated poles is sold to a local horticultural product manufacturer in accordance with DECCW resource recovery exemptions².

Sale of recycled products

The processed timber is then converted into a range of high value applications such as flooring, cladding, internal lining, furniture and kitchen bench tops. Markets are all over Australia and overseas. Where the timber is sold in NSW it is done so in accordance with the *NSW Timber Marketing Act 1977*.

Integral Energy purchased a quantity of remanufactured timber including feature panels and floorboards from AAH. The timber, which was originally recovered from Integral Energy’s 98M1–Nowra to Ulladulla 132kv Upgrade project, now takes pride of place as part of a recent refurbishment at the company’s headquarters at Huntingwood in Western Sydney.

Reports and record keeping

Integral Energy records all information associated with the timber recycling program and incorporates this data into its annual reports and associated industry group reports such as the *NSW Government Waste Reduction and Purchasing Policy (WRAPP)*.

¹ Timber treated with CCA can no longer be used for children’s play equipment, garden furniture, picnic tables, external seating, domestic decking boards or handrails.

² General exemptions are published on the following web page as they become available: www.environment.nsw.gov.au/waste/RRecoveryExemptions.htm

Notes on the Site Environment Management Plan (SEMP)

AAH engaged a local environmental consultant to prepare its SEMP, which covers key issues including legislative requirements, identification and ranking of environmental risks, staff training as well as a contingency plan for dealing with emergencies such as fire. Company procedures and all processes are periodically audited and Integral Energy also makes periodic visits to AAH to ensure that the SEMP is adhered to. Integral Energy acknowledged that: "One of the key reasons AAH was chosen as a partner in the project was their comprehensive Site Environment Management Plan".

Notes on the protocol

The experiences of Integral Energy and AAH have had a key role in developing the protocol and the hope is that other utility companies can benefit from their experience. Integral Energy pointed out that their arrangement with AAH developed over time as they learnt from each other. According to Integral energy, there is no fortune to made doing this but they are striking the right balance between economic, environment and social aspects. The protocol documents and the obligations of the parties can form the basis of a good contract that benefits all parties over the long term.

Benefits to Integral Energy

- A small income is generated from the sale of suitable poles to AAH as compared to the increasing costs of disposal for poles before recycling occurred.
- Recycling the poles reduces the need to harvest trees in natural forests.
- Recycling the poles is a much better use of the beautiful Australian hardwood timber than burial in landfill and it also saves landfill space.
- Improved management of redundant preservative treated poles reduces the risk of exposure through inappropriate storage, reuse or combustion.
- Integral Energy's reputation as a responsible and sustainable enterprise is improved.

Contacts

Timber Development Association

Tel: 02 8424 3700

info@tdansw.asn.au

Australian Architectural Hardwoods

Tel: 02 6562 2788

aah@midcoast.com.au

Integral Energy

Tel: 131002

www.integral.com.au

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59-61 Goulburn St, Sydney

Phone: (02) 9995 5000 (switchboard)

Fax: (02) 9995 5999

TTY: (02) 9211 4723

Email: sustainability@environment.nsw.gov.au

Website: www.environment.nsw.gov.au

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