

Greening Australia's roads

The new Perth Bunbury Highway road network (opened 20 September 2009) is helping to pioneer a breakthrough in the transformation of Australia's mining residues.

Two trials by the WA-based Cooperative Research Centre for Sustainable Resource Processing (CSRP) are using treated mineral residues for road base and nutrient filters.

In the first trial, more than 2500 cubic metres of sand was extracted from bauxite residue and used as road base to widen the Greenlands Road access to the new highway near Pinjarra.

CSRP has developed a concept called ReSand® where sand sourced from recovered materials is compared to conventionally sourced quarry sand. The source of sand which is assessed as having the lowest ecological footprint or impact can then be designated as ReSand®. This gives developers, regulators and the community an assurance that the use of these residue materials is in fact the best outcome for the environment and for society.

In the second trial associated with the Perth Bunbury Highway, a demonstration 'nutrient trap' has been installed by the side of the new road. The trap collects water run-off and removes nutrients such as phosphates and nitrates, to help prevent algal blooms in the surrounding waterways. Bauxite residues were used in both trials due to it being an abundant material produced in WA each year (over 25 million tonnes).

The initiative is part of a technology revolution led by WA researchers to convert a wide range of mining and energy sector wastes to commercial products.

CSRP CEO, Stevan Green, says that the current programs effectively recast waste materials as useful products.

"We have made some major advances in recent years to develop the technology for converting mining and energy sector residues into potentially valuable construction and agricultural materials," he said.

Mr Green said the recovery of construction sand from mineral residues would have a range of potential benefits including:

- replacement of increasingly scarce supplies of quarry sand;
- reduction in the clearing of natural bushland for sand quarries; and
- reduction in the demand for expensive waste residue containment facilities.

"These benefits can lead to reduced costs, less energy and water use and lower greenhouse gas emissions," said Mr Green.

Other CSRP innovations, to turn mineral processing residues from Australia's mining and energy industries into useful products, include concrete, construction materials (such as sand and aggregates), soil treatments and nutrient traps; all with the aim of improving ecological, societal and economic outcomes.

CSRP worked with the Department of Agriculture and Food WA, Main Roads WA, Southern Gateway Alliance, Alcoa, Wallis Water and other project partners to establish these and other trial projects.

More information at: www.csrp.com.au



Grading of sand recovered from bauxite residue in the construction of a section of Greenlands Road. Image courtesy of CSRP.



Tony Bagshaw (CSRP), Evan Jamieson (Alcoa), Alan Jones (Alcoa) and Stevan Green (CSRP) with some of the recovered sand used on the Perth Bunbury Highway project. Image courtesy of Garside Images.