Australian Government
Department of Sustainability, Environment, Water, Population and Communities

Waverley Council: recycled glass in roads

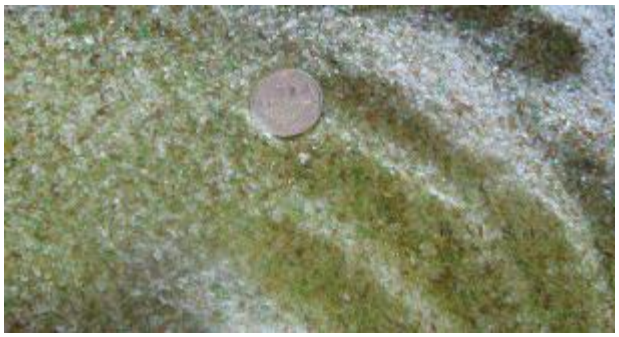
Introduction

In 2010, Waverley Council, in partnership with New South Wales Department of Environment, Climate Change and Water, New South Wales Roads and Traffic Authority, Institute of Public Works Engineering Australia and the Packaging Stewardship Forum, provided the first site within New South Wales to demonstrate alternate use of crushed glass in pavement construction as an accepted product in New South Wales roads.

Two 100-metre sections of pavement containing glass product were constructed. The first site at Blair Street, Bondi used glass product in asphalt and the second site at O'Brien Street, Bondi used glass product in concrete pavements.

Use of recycled and re-used material

Waverley Council substituted 15 tonnes of glass cullet into the road projects, 7.5 tonnes into asphalt and 7.5 tonnes into concrete.



Left: Ten cent piece to indicate the size of the glass cullets

Drivers and benefits

There is an estimated 75 000 tonnes of crushed glass fines in New South Wales. There is currently a stockpile in Sydney of an estimated 60 000 tonnes. This material is destined for landfill unless an alternative use can be found.

If the concrete industry was to use the crushed glass fines they would not use 75 000 tonnes of natural sand at $30 per tonne. This would save them $2.25 million.

The project partners contributed to the participants' recycling and sustainability targets by demonstrating the use of glass in pavement construction and reporting the tonnes of recycled glass material used.

In the last 12 months the Southern Sydney Regional Organisation of Councils have used approximately 9000 m³ of concrete. If this concrete used the 56 per cent glass-sand replacement used in the Waverley case study, approximately 4000 tonnes of virgin sand could be replaced with glass.

Problems and challenges

Behavioural change—there was reluctance by local road engineers to move towards recycled glass as an alternative to virgin material.

Broad stakeholder involvement—the business case identified the need to establish interest groups incorporating stakeholders from industry, Local Government Associations and associations such as the ARRB Group, APPA, Institute of Public Works Engineering Australia to confirm the status of existing testing and research and develop specifications for further testing to increase acceptance of the crushed glass product.

Solutions

Behavioural change—the Institute of Public Works Engineering Australia has created a course to educate road engineers in how to use alternative materials in construction projects.

Collaboration—this project was conceived and delivered by a group of 'champions' from organisations in different sectors whose goals aligned.

Increased knowledge—as tradesmen gain experience working with reclaimed materials, knowledge in the industry increases, new methods of construction can be tried and tested, and time savings can be achieved. There is a shortage of tradespeople who are able to work with the inconsistencies of reclaimed and recycled materials; training is required.

Opportunities for other projects

Before this project there was no general acceptance of crushed glass use in road construction. In August 2008, the Packaging Stewardship Forum of the Australian Food and Grocery Council commissioned a report by GHD entitled *The Use of Crushed Glass as both an Aggregate Substitute in Road Base and in Asphalt.*

The GHD report identified that to gain acceptance for the use of crushed glass in pavement applications it must be demonstrated that an asphalt or road base mix can meet required properties and performance measures.

The list of opportunities for crushed glass includes:

- aggregate in road base and sub-base
- aggregate in asphalt, including 'glassphalt'
- aggregate in tiles
- aggregate in decorative concrete for architectural facades
- alternative to mulch
- filtration material
- alternative to sand in golf courses
- alternative to fill and bedding material
- aggregate in concrete and cement

Contacts and links

Waverley Council
www.waverley.nsw.gov.au/

Australian Food and Grocery Council
www.afgc.org.au/

Report: *Specifications for Recycled Crushed Glass as an Engineering Material*
http://www.arrb.com.au/Home/News.aspx?newsID=29

Consultation

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Photos

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