

Case study: Using Recycled Glass in Road Base Project

COUNCIL NAME

Lockhart Shire Council

WEB ADDRESS

lockhart.nsw.gov.au

SIZE

2,895.32 square kilometres

POPULATION

3,119

Overview

Lockhart Shire Council has developed construction techniques to improve its road reconstruction processes including the use of recycled glass in the road base. Recycled glass is blended with Council's own quarry materials and then used for road construction projects. The use of the recycled glass is expected to extend the life of Council quarries by five to seven years, as well as reduce the stockpile of crushed glass at the local Material Recycling Facility (MRF), Kurrajong Recycling. Council has also used recycled glass in footpath and stormwater construction reducing the need to purchase virgin sand.

Background

The project was commenced in 2015 when Council reviewed its road making practices and developed new processes to widen the Shire's narrow sealed roads. Council became aware of the crushed glass stockpile through its local Regional Organisation of Councils and through regular publications like LGNSW's Weekly.

The project addresses the ongoing problem of the huge stockpile of crushed glass at MRFs that is not being used. Blending the crushed glass with Council's own gravel material, as well as using the crushed glass in footpath and stormwater construction activities, means that Council can use all the crushed glass from Kurrajong Recycling each year and also reduce the amount of raw gravel it requires.



Implementation

The project aimed to reduce stockpiles of crushed glass at Kurrajong Recycling and reduce the quantity of raw gravel crushed at council quarries. Blending crushed glass into gravel would reduce the volume of raw material required thus extending Council quarries' life and be more environmentally sustainable.

Road making practices were reviewed, looking for ways to improve and incorporate crushed glass in construction. Trials using crushed glass in road making, footpath and stormwater construction were held to determine if the processes were successful.

A Pugmill was purchased to blend the crushed glass and gravel, as well as added water, enabling the crushed glass and gravel mix to be placed on the road, improving the productivity of road base placement. The Pugmill cost council \$294,000, supported by a \$221,850 grant from the EPA.

The project's financial model indicated a net present value of \$103,489 over 20 years including the capital and operational costs of the Pugmill purchase and productivity savings on gravel placement.

Outcomes

From January 2018 to May 2019, council has:

- Removed approximately 5,000 tonnes of stockpiled crushed glass from Kurrajong Recycling (its entire stockpile of crushed glass at that time), as well as reduced the amount of virgin material required from its own quarries
- Undertaken trials and use of the recycled crushed glass in footpath construction, stormwater drainage works and unsealed (gravel) roads resheeting
- Successfully gained grant funding to purchase a Pugmill to blend crushed glass into council quarry materials

Council continues to remove stockpiled crushed glass and is preparing to commence full operations blending it with its own gravel materials. This is expected to continue into the foreseeable future.

Key Learnings

Council will ensure the benefits are ongoing by simply continuing to remove the stockpile of crushed glass from Kurrajong Recycling each year. This will reduce the amount of raw gravel material council will have to extract from its own quarries. The use of the Pugmill improves the on-site productivity of road base placement. Council staff will continue to monitor the operations and tweak the recipe to develop optimum blend of materials and placement rates. The project is part of the overall continuous improvement program of council.

This project can be replicated by other Councils who can build on Lockhart Shire Council's experience to implement similar practices within their own construction projects.

Contact

Name: Darren Smallwood

Position: Manager of Works

Phone: (02) 6920 5305

Email: dsmallwood@lockhart.nsw.gov.au

This project was the 2019 winner of the Resource Recovery Award at the LGNSW Excellence in the Environment Awards