



Closing the loop on builders' rubble through concrete innovation

Concor infrastructure, Transnet City Deep Container Terminal
Johannesburg

Through innovative concrete production methods, Concor Infrastructure were able to save **R10.8 million in virgin material costs** and prevented **R23 million worth of landfill gate fees**.

Savings

- R10.8 million in virgin material cost savings (In 2017 the cost of a virgin G5 ranged between R120-160 per m³).
- R23 million worth of landfill gate fees were avoided.

For more information,...

1. For further information on this case study or market insights regarding builders' rubble, please **contact Kirsten Barnes, Waste Economy Analyst at GreenCape (kirsten@greencape.co.za)**
2. Become a GreenCape member and receive industry updates, news and events info: <https://www.greencape.co.za/become-a-member/>



CaseStudy

Context

Concor Infrastructure was tasked with the 2000 m² expansion of the City Deep container terminal. The work included resurfacing of the 144 000 m² facility, which generated 77 000 m³ of concrete 'waste'. The brief to Concor Infrastructure was to achieve a 24% diversion from landfill by including the materials back into the revamp.

Solution

Through the use of innovative concrete production technology, all concrete 'waste' (77 000 m³) was recovered, recycled and re-engineered to make the re-use of it possible in the project.

Concrete technology solutions

Recovered material was re-engineered for use in the project through two innovative concrete production solutions.

1. High volume pulverized flue ash concrete (HVPFAC): HVPFAC combines fuel ash from coal-powered power plants with a mineral slag which lowers greenhouse gas emissions.
2. Geopolymer concrete: A "cement-less" concrete, which includes industrial byproducts to form a product that outperforms concrete in terms of strength, and that saves up to 90% of the greenhouse gas emissions associated with traditional concrete.

Authored by Dr. Kirsten Barnes, GreenCape, waste@greencape.co.za / 021 811 0250,

Key players: Client: Transnet Limited; Main Contractor: Concor Infrastructure; Demolition and Crushing Contractor: WG Wearne