# Concrete products from ash

## OPPORTUNITY

William Tracey Group, a recycling and resource management group, supplies ash collection and processing services to the majority of Scotland's waste and biomass plants.

Currently in Scotland, the majority of this ash is sent to landfill in Scotland. The William Tracey Group wanted to investigate the possibility of turning this current waste stream into a usable construction product that would have a number of commercial and product benefits.

The William Tracey Group, with the support of the Construction Scotland Innovation Centre approached the AFRC to look at both the removal of the hazardous nature of the material and to prepare a consistent range of products for use in the construction sector.

## PROJECT

The project, which was funded by the Construction Scotland Innovation Centre, was to investigate different methods of heat treating the waste material to remove contaminants and enhance the quality of the concrete component.

AFRC heat treatment experts carried out furnace trials to refine and characterise ash component make up, sintering time and temperature most suited to providing a reliable and repeatable concrete product composed of waste ash, cement and water.

The concrete mix was then made and sintered into small pellets, locking up any contaminants and strengthening the aggregate.

Uni-axial compression tests on single pellets were also carried out to find out the initial mechanical properties and evaluate the effect of the various heat treatments.

## OUTCOMES

The AFRC's in depth knowledge of heat treatment enabled William Tracey Group to identify suitable temperature and heat treatment duration parameters for the drying and sintering processes to produce lightweight concrete pellets from the waste ash.

The sintering trials carried out at the AFRC confirmed initial predications that the pellets would increase in strength as well as be more easily recyclable.

If William Tracy Group decide to pursue this project further, it will have the potential to divert 100,000 tonnes of waste per annum and convert this into a new raw material that can offer a new alternative aggregate product to the construction industry.

## SUPPORT

- Total Project Value - £27K
- CSIC contribution - £10K

## PROJECT DURATION

October 2017 - December 2017

**Innovation Support:** Project Innovation

**Sub Sector:** Building Projects