

# Production of Non-Structural Precast Elements

## Technology Overview

The technology relates to cementitious concrete compositions incorporating recycled plastic aggregate as partial replacement of natural fine aggregate. The innovation is particularly, but not exclusively, applicable to production of precast concrete products for use in the built environment sector or relevant industries. The principal application of the invention can be used for production of non-structural precast concrete drain channels, road kerbs and other infrastructural elements.

## Features & Specifications

The technology describes the manufacturing of recycled polypropylene aggregate (RPA) into standardised forms using recycled plastic resins, recovered from municipal solid waste streams, via an industrial twin-screw extruder and pelletizer system, for use as partial fine aggregate (natural sand) replacer in cementitious concrete composite; and the formulation of cementitious composition that constitutes cementitious-based binder and RPA mixture of different sizes as fine aggregate replacement up to 20% by volume of natural sand. Relevant authorities were engaged to ensure that the quality of the plastic-concrete mix is aligned to international standards and local requirements.



## Customer Benefits

This technology provides an alternative of recycling polypropylene plastic waste to be used as RPA to partially replace fine aggregates (natural sand) in concrete. As the plastics recycling market is facing uncertainties such as fluctuating prices and demands, restriction on exportation of plastic waste and everchanging policies of countries to ban or imposed strict import controls, it would be beneficial to find alternative ways recycling this waste and use them as construction materials within Singapore itself.

## Potential Applications

Land Transport Authority (LTA)-compliant Precast Concrete Road Elements for suppliers and contractors in the built environment sector.

## Collaborator

- JTC Corporation

