

Delivering sustainable FCERM construction: Plastic wastes



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Plastic waste and its disposal became a prominent issue in 2019 in the food and retail industry. We can expect the construction industry will also have to follow a more sustainable approach to plastic use. This includes in building, operating and maintaining assets for flooding and coastal erosion risk management (FCERM).

Reducing single-use plastic can contribute to these sustainability goals (along with other measures like reducing carbon footprint and pollution risks). Project partners JBA Consulting and JN Bentley, who design, build and refurbish flood and coastal risk management assets, helped MSc student Alice Dear to research this issue.

Aim

In the UK, determine where the construction industry (particularly flood risk management) can reduce single-use plastic (SUP) consumption and waste management sustainability.

Objectives

- Identify factors which facilitate and obstruct using SUP on construction sites
- Identify factors which facilitate and obstruct disposal of SUP on construction sites
- Assess current practices and develop processes to reduce SUP consumption and increase sustainable disposal
- Produce recommendations to aid construction sites managers in dealing with SUP
- Consider potential un-intended consequences of using SUP alternatives.



Methodology

A comprehensive literature review, followed by fifteen semi-structured interviews and two live site visits were used to build an in-depth understanding of the topic, identify data gaps, and gather evidence directly related to the flood risk management construction industry.

The key research questions were:

- Are there viable SUP alternatives which are not more costly either environmentally or economically?
- How can waste management be improved to ensure more plastic is recycled and diverted from landfill?
- Is there any SUP consumption on site which is avoidable, and if so how can that be achieved?
- How can construction industry employees contribute to reducing SUP waste from their sites?



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Findings

Construction produces over 200,000 tonnes of plastic waste annually.

Single use plastic on construction sites is predominantly packaging. As off-site construction increases, so too does the use of protective plastic packaging.

Plastic use also included:

- Site signs and overhead line markers
- Metal piping intended for underground use in two layers of protective plastic
- Personal protective equipment, eg gloves
- Tools and other re-usable items
- Office consumables
- Structural material
- Employees' personal rubbish

Why decrease plastic use?

- Avoids environmental harm
- Can reduce project costs
- Avoids landfill of non-biodegradables
- Reduces fossil fuel use
- Improves constructor's public image



Actions to reduce single use plastics in flood and coastal risk management construction

- Supply chain measures: where constructors receive products in SUP packaging, they can request their supplier to provide re-usable containers
- Collect un-used and reusable material for transfer to the next project
- Improvements to waste management are key to reduce the amount sent to landfill and achieve closed-loop recycling