

# Shared Learning

IP W, W & C Region – Reading Station Area Redevelopment (RSAR)

## Excess excavation waste, Elevated Railway, Reading Station Area Redevelopment (RSAR)

### Details:

- At the start of the Reading Elevated Railway project in 2013, Balfour Beatty submitted a Site Waste Management Plan (SWMP) for the works providing a waste forecast of around 80,000 tonnes, including 56,000t of excavation arising (mainly from pile foundations undertaken by Continuous Flight Auguring or CFA), 8,200t of ballast (from the removal of the existing track foundations) and 5,600t of concrete from the GWR maintenance depot demolition. This material was identified for reuse on site.
- A Value Engineering workshop was carried out at the Outline Design stage which identified significant resource efficiencies and carbon savings (see Shared Learning) as well as waste reduction (by reducing the number of foundations) and waste reuse opportunities (by replacing the last pier on both sides of the 'viaduct' by ramps made of fill material).
- The site was extensively surveyed due to its historic use as a train maintenance depot and the contaminated land assessment confirmed the presence of hydrocarbon into the ground, making the site-won material unsuitable for reuse under the waste permitting system.
- During the works it also became evident that the amount of waste generated by this project had been hugely underestimated.
- In order to reuse a large amount of waste including material contaminated with hydrocarbons, Balfour Beatty commissioned a Material Management Plan (MMP) following the CL:AIRE Code of Practice. It included a risk assessment for human health (i.e. nearby residents and future users of the site) and for controlled waters (i.e. groundwater and surface water) in order to confirm the reuse of this material on site would not affect them. It was then signed off by an Authorised Person who notified the Environment Agency (EA).
- 72,000m<sup>3</sup> (estimated at 108,000t) of site won material and 12,000 m<sup>3</sup> of demolition material (estimated at 24,000t) were reused under this MMP. The project also imported crushed recycled glass as granular fill (See Shared Learning)
- At the end of the project, an excess 70,000t of spoil was left on site with the aim to reuse it off-site. After 2 years, no opportunity was found, mainly due to its low engineering value (i.e. high clay content) and presence of contamination as well as staff turnover.
- This resulted in the excess material being taken off site, mainly to landfill after extracting the recyclable content (i.e. aggregates), due to the absence of local recovery options (e.g. landfill or quarry restoration).

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- The MMP developed and implemented on the RSAR Elevated Railway project diverted a large amount of waste from landfill, which would have not been achievable under the current waste permitting regulations due to the presence of contamination. It is estimated that the project saved approx. £10 million in waste disposal and import of fill material (including contractor's incurred costs).
- The excess waste wasn't included in the MMP as there was no certainty of use for it. As a result, it should have been removed at the end of the project and not stored on site awaiting potential reuse opportunities to arise. Instead off site reuse or recovery options should have been actively sought when it became apparent that the amount of waste would exceed the need for it on this site.
- As the material excavated during the works was being reused under the MMP despite being contaminated, there was no real need to segregate the arisings. However an inspection and monitoring regime was in place to identify, quarantine, sample and test potential sources of contamination (i.e. hot spots).
- But these arrangements under the MMP weren't aimed at characterising waste for off-site disposal and, as a consequence, an extensive programme of sampling and testing had to be carried out in order to characterise the stockpile and isolate pockets of hazardous waste. As a result less than 5% of the stockpile was treated as hazardous which achieved a significant cost saving compared to treating the whole stockpile as hazardous (i.e. using worst case scenario for characterisation).

- Waste forecasts should be revisited throughout design to ensure that they remain as accurate as possible. The waste forecast for the RSAR Elevated Railway was under-estimated which didn't allow adequate planning for reuse (either on site or off site) by actively seeking opportunities in the Reading area and characterising the waste material through sampling and testing.
- The principles of "designing out waste" weren't specifically considered during either the outline or the detailed design stage, despite Value Engineering being actively implemented on the project.
- The cost for the excess waste disposal was estimated at £4million, still achieving a significant waste reduction and associated overall cost saving.



Reading Triangle