

Avoidance, Recycling and Reuse

David Adamson Sellafield Ltd

Designing out and avoiding waste

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"Nuclear decommissioning and the waste hierarchy: where we are, challenges and issues"

SD:SPUR Event, Birmingham

Engineering Design Capability



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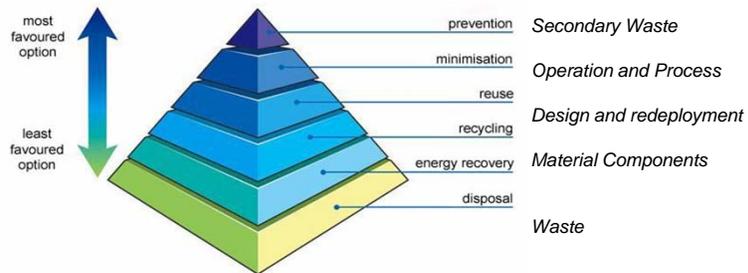
- Large amounts of potential reuse of construction concrete
- New build programme to support the decommissioning of Sellafield Ltd
- Opportunity for new build to embrace best practice in waste management
- Use of tools and techniques in minimising waste



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- Waste Hierarchy



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LLW Strategic Review 2009 provided:

“Reuse/recycle waste in new construction projects within the nuclear industry.”

Created the opportunity for the reuse and recycling of Exempt Waste for construction projects such as rubble as aggregates for new roads, waste stores, LLWR vaults, capping materials etc.

(Ref: LLWR – LLW Strategic Review 2009 – NLWS/LLRW/01-Issue)

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Demolition of iconic nuclear structures



An ideal opportunity to apply some of the methods described by the Waste Management Hierarchy (WMH) in reducing the amount of LLW being produced, and possibly designating the demolition material as either Exempt or VLLW.

The standard BS8500-2 offers a full specification for the uses of recycled concrete aggregates in concrete, although with such a vast range of recycled aggregates an all encompassing specification for the use of these aggregates is yet to be determined.

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Sellafield Ltd are behind the use of RCA. But there are difficulties...

- Recycled Concrete Aggregate (RCA) **is not permitted** as aggregate for Structural Concrete on the Sellafield site
- RCA may be used for **non-structural** purposes such as mass concrete fill, support for hard landscaping etc.
- Use of RCA - no **trend at present** in short term and **no timeline** for Building Demolition at Sellafield apart from overall NDA strategy.
- Extent, control, ownership, responsibilities, QA/QC and use to be determined through Technical Engineers both at Sellafield and at Risley.

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Site for new Medical Building trialed for the implementation of waste management hierarchy in recycling concrete for reuse.



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Pulverised Fuel Ash & Ground Glass Blast Slag

- Sustainable concrete design using PFA & GGBS is well established on the Sellafield site and permitted in new structural concrete.
- 30 years use to date
- Now mandatory in Civil Engineering Specifications

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Reuse of Steel



- Steel sections pass through Wheelabrator to clean off scale, rust etc.
- Sent for reuse off site for local scrap or for melting by supply chain
- Early days in potential reuse/fabrication on Sellafield site

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Smart Shuttering

- Module system
- Multiple Use
- Increased Durability
- 4 times greater use



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Site Waste Management Plans

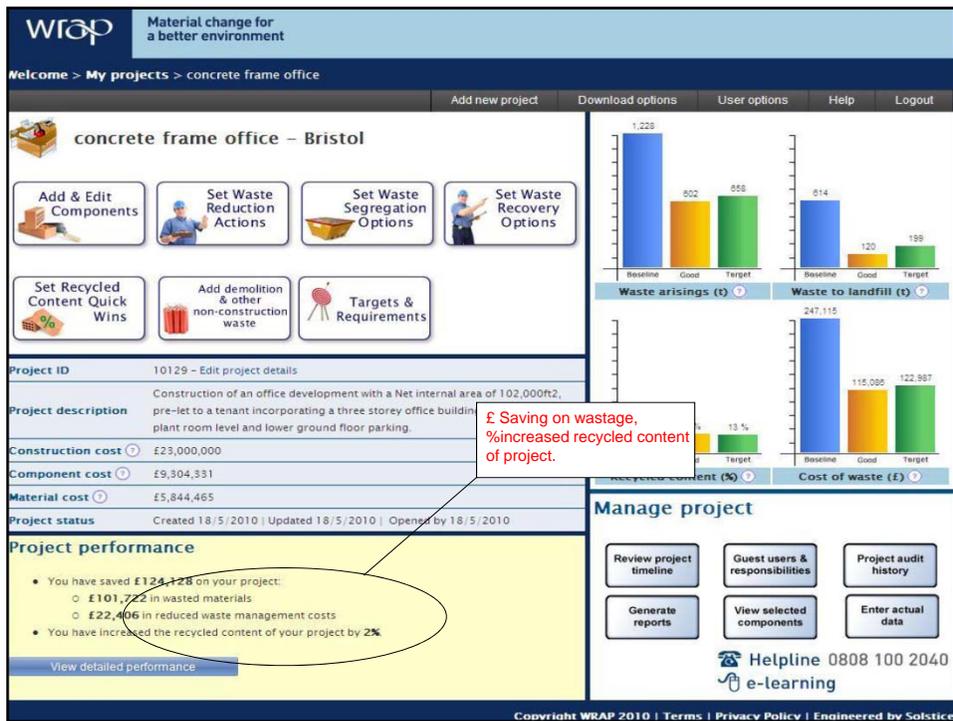
- Mandatory in law on Construction Sites since 2008
- Potential recycling, salvage, reuse and return areas
- Buy back schemes and efficient design can reduce the volumes of off-cut waste.
- Weekly log of site materials and those going to landfill and for recycling
- Use of landfill will be the last option
- At the conclusion of construction activities an estimation of the cost savings that have been achieved is completed from implementing the SWMP

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WRAP tool

- Calculates potential waste arisings
- Advises on improving recycled content
- Quantifies overall Net Waste for the Project
- Generates waste forecast for SWMP



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- Working with CIRIA on Lean Construction
 - New guidance on Lean Construction out on 9th May
 - How to change to a Lean culture within a Construction Business
 - Thinking differently about waste
 - Identify and drive out waste from processes on a day by day basis

Lean is a continuous journey

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Thank You

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