

# Development of Options for the Use of Recycled Concrete Aggregates for Waste Management

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## Baseline Waste Management Technologies

- Conventional cement grouts are a baseline technology within the UK
  - Low Level Waste
  - Intermediate Level Wastes
- Development work performed for more than 30 years
- Operating plants at a number of UK nuclear sites for the treatment of both LLW and ILW



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## Background to interest in RCA

- Long term decommissioning operations on UK Nuclear Decommissioning Authority (NDA) sites
- Large volumes of concrete will be generated
- Potential re-use applications
  
- Ongoing package of work funded under the NDA Direct Research Portfolio
  - Sponsors Dr James McKinney and Dr Darrell Morris

## Multi Stage Process

- Identification of waste streams
  - Volumes
  - Time Frames
- Stakeholder Engagement
  - Viewpoints
  - Existing plans
  - Gap Analysis
    - Limited data on fine RCA available
- Practical Studies
  - Generation of data for comparison with existing plant operations

## Industry Stakeholder Engagement

- Nuclear Installations Inspectorate (NII)
- Environment Agency (EA)
- NDA Radioactive Waste Management Directorate (RWMD)
- Site Operators

## Testing Protocols for Wasteforms

Parameters of interest

- Fluidity
- Compressive Strength
- Dimensional stability
- Bleed

## Programme of Work

- Laboratory scale mixes with a range of formulations
  - Aggregate Type
  - Two Particle Sizes
  - Cement Binder Types
  - Water Content
- Selected Rig Scale Mixes
  - Assessment of scale up

## Results to Date

- Initial Laboratory data
  - Required Properties can be achieved
    - Fluidity
    - Bleed
    - Compressive Strength
    - Dimensional Stability
- Rig scale Trials ongoing

# Possible Applications

## Large Oversize Items



## Summary

- Fine RCA has potential for re-use in future waste applications
- Work ongoing to produce primary data on properties
- Initial laboratory scale data produced
- Ongoing programme of work