

Collaborative Research Programme in Decommissioning, Immobilisation and Storage Solutions for Nuclear Waste Inventories

Simon Biggs
University of Leeds

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World-Class University Network

Imperial College
London



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Decommissioning, Immobilisation and Storage Solutions for Nuclear Waste Inventories

Objectives

- To carry out internationally leading science and engineering research in the area of decommissioning and nuclear waste management.
- To support research that provides routes to innovative technology developments that can be applied to decommissioning and nuclear waste management.
- To foster and develop new multi-disciplinary research partnerships between academic and industry researchers.
- To train the next generation of UK researchers, equipping them with skills and experiences relevant to nuclear waste management and decommissioning issues.
- To provide a focal point for government, industry and academics through which current and future R&D issues associated with nuclear waste and decommissioning can be discussed.
- To provide a route for public understanding of the underlying research and development needs, opportunities and solutions to nuclear waste and decommissioning.

Industrial Engagement: project building

- **Very strong support**
 - NDA - strategic guidance
 - SL - detailed challenge definition
 - NNL - academic/industrial bridge, people/facilities
- **Engaged throughout consortium building**
 - Industry challenges communicated at workshop
 - Industry partners reviewed >60 proposed projects
 - Key specialists from SL and NNL provide ranking and advice
 - Some projects within selection revised as result



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Industrial Engagement: project delivery

- Industry partners want to be heavily engaged in delivery
Further development of scope in some areas will be required.
One or more industry supervisors/advisors for each project (both PDRA and PhD).
The amount of in-kind industry support for this purpose is greater than would typically be offered.
- Industry looking for partnership in delivery
Embedding of 2 PDRAs in joint industry-academic team
Several other projects planning secondments to active labs or plant.
Accelerated development of subject matter experts (both academic and industry host)
- Consortium intends to be inclusive in industry engagement - other industrial partners will be encouraged to give input and support.



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National Importance

- Nuclear Industrial Strategy 2013
 - “To have a joined up approach to nuclear R&D across government, industry and academia which serves to benefit the UK economy and ensures the security of supply”
 - “To establish the UK industry as a global leader in waste management and decommissioning”
- Alignment with NDA Strategy (2011)
 - 4 key R&D themes in consortium
 - “Structural Integrity”, “AGR, Magnox and Exotic Spent Fuels”, “PuO₂ and Fuel Residues”, and “Legacy Ponds and Silo Wastes”
 - Map directly to NDA key themes
 - “Site Restoration”, “Spent Fuels”, “Nuclear Materials” and “Integrated Waste Management”
- EPSRC Strategy
 - Energy Theme
 - Nuclear Power

National/International Links

- Members of consortium already have extensive links

Direct research partnerships

Members of international research consortia

EU, NSF etc.

- Invite key international players to participate in consortium meetings

Offer advice to consortium

Advisory Group

Technical Programme

- **Aligned with NDA Strategy**

Reflects balance of industry needs and academic skill base
Industry had strong input into selection of research projects included here

Field is too broad to cover everything in sufficient detail with funds available

Research primarily is at TRL 1-3

Necessarily includes some higher risk projects

- **Active work a key focus**

- **Modelling to underpin safety cases**

Outreach & Impact

- Important aspect of consortium

- 4 major domains

- Knowledge, People, Economy and Society

- 5 critical enablers

- Building & maintaining relationships and networks

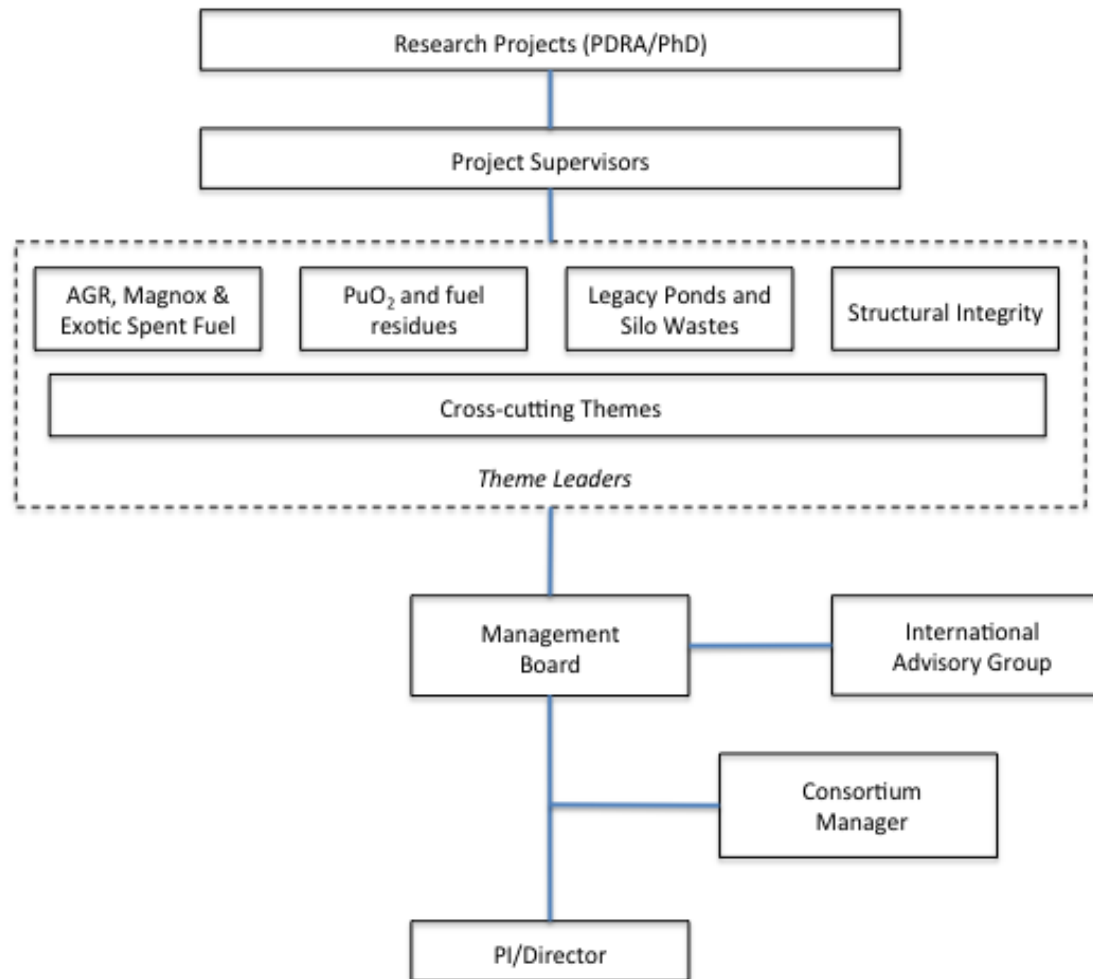
- Communication and dissemination

- Public, media and government engagement

- Knowledge transfer and commercialisation

- Training and Development

Management



Summary

- **Excellent team of researchers**
Significant track-record of success in supporting relevant R&D for nuclear
- **Builds from earlier EPSRC consortia**
KNOO & DIAMOND
Learning from these consortia input into this new activity
Success of earlier consortia gives confidence for this new activity
 - Supply of researchers into industry
 - Technical developments for deployment
 - General awareness of industry needs
- **Expands earlier groupings**
Wider coverage
Stronger team
Larger international profile