PREDEC 2016

International Symposium on PREparation for DECommissioning

Characterisation: Challenges and Opportunities – A UK Perspective

Environment Agency

NDA Nuclear Decommissioning Authority

ONR Office for Nuclear Regulation

SEPA Scottish Environment Protection Agency

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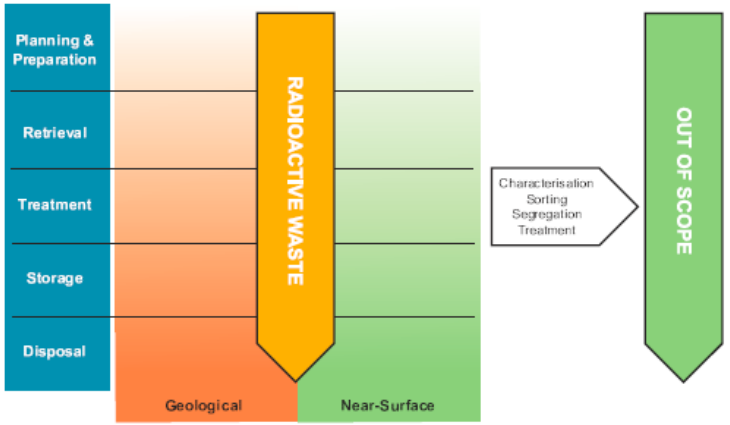
Introduction

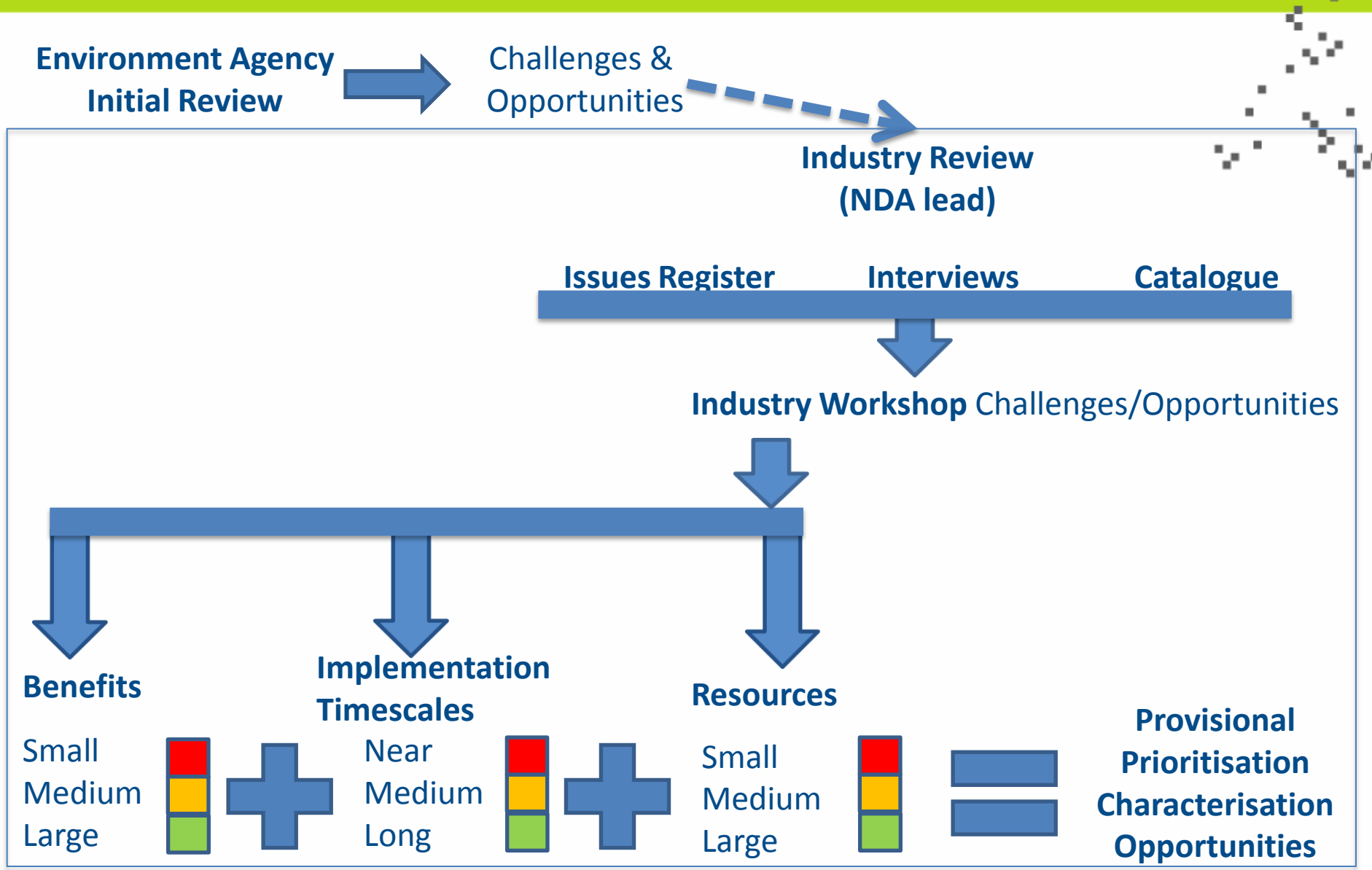
- Major UK decommissioning programme to address nuclear legacy
- Nuclear Decommissioning Authority (NDA) created 2005
- Nature/scale of work poorly understood and highly uncertain
- Characterisation playing key role in understanding nuclear legacy.
  - ➢ Central to decommissioning strategies/plans
  - ➢ Supports the management of the waste
  - ➢ Facilitates reduction in project risks
  - ➢ Supports project costs optimisation



Introduction (cont.)

- UK nuclear site regulators include:
  - Environment Agency (EA)
  - Office for Nuclear Regulation (ONR)
  - Scottish Environment Protection Agency (SEPA)
- All regulators recognise the importance of characterisation for:
  - Compliance demonstration
  - Supporting waste management (prevention/minimisation)
  - Ensuring worker safety by evaluation and optimisation of doses
  - Maintaining public confidence
- Regulators & NDA are reviewing characterisation practice in the UK
- Provisional findings are presented

Characterisation review methodology



Provisional Results

- Provisional results summarised in tabular format
- Use of traffic light system for prioritisation
- Grouped in characterisation sub-topics
- Key provisional findings presented by sub-topics

Table 1: Preliminary Results Summary detailing: the identified challenges and opportunities; possible solutions; and ranking of the benefits, timescales to implement and resource requirements.

Challenges and opportunities	Proposed solution	Benefit S/M/L	Timescale N/M/F	Resource L/M/H
Standards and guidance				
Principles from external guidance documents and standards are commonly embedded into internal processes and procedures. There is a requirement to continually review current standards and ensure they are incorporated within these documents.	Continual review (not scored –routine)			
There are an extensive number of external guidance documents which are used across the industry, therefore it can be difficult to assess the quality/usefulness of available documentation.	Assessment held on portal	L	N	M
To ensure standards and guidance documents are practical and useful by providing real examples of how characterisation activities have been done successfully. However, there is a general agreement that the material should not be prescriptive.	Revision of standards and guidance	M	F	H
Generally the guidance documents identified consider the characterisation of radiological materials, but do not address the need to measure non-radiological properties of nuclear material and consequently may not adopt an appropriate characterisation programme. There is an opportunity to make non-radiological guidance more visible to the industry.	Portal	L	N	M
To create a single **"portal"** to access standards and guidance.	Portal	L	N	M
Good practice sharing and learning from experience				
The effectiveness of internal communication processes to disseminate information on industry wide good practice within organisations is variable across the industry. Every organisation faces a challenge to ensure that this process is effective.	Internal networks / hubs	S	M	M
Increased communication of good practice sharing and learning from experience across the industry has clear benefit. The key barriers to achieving this are time 'away from day job' and identifying a clear business need.	Optimise forum / network relevance (not scored)			
A web-based information hub to store information from forums/groups was identified as an effective means for sharing good practice which could be applied more widely across the existing forums/networks.	Web based hubs	L	M	M

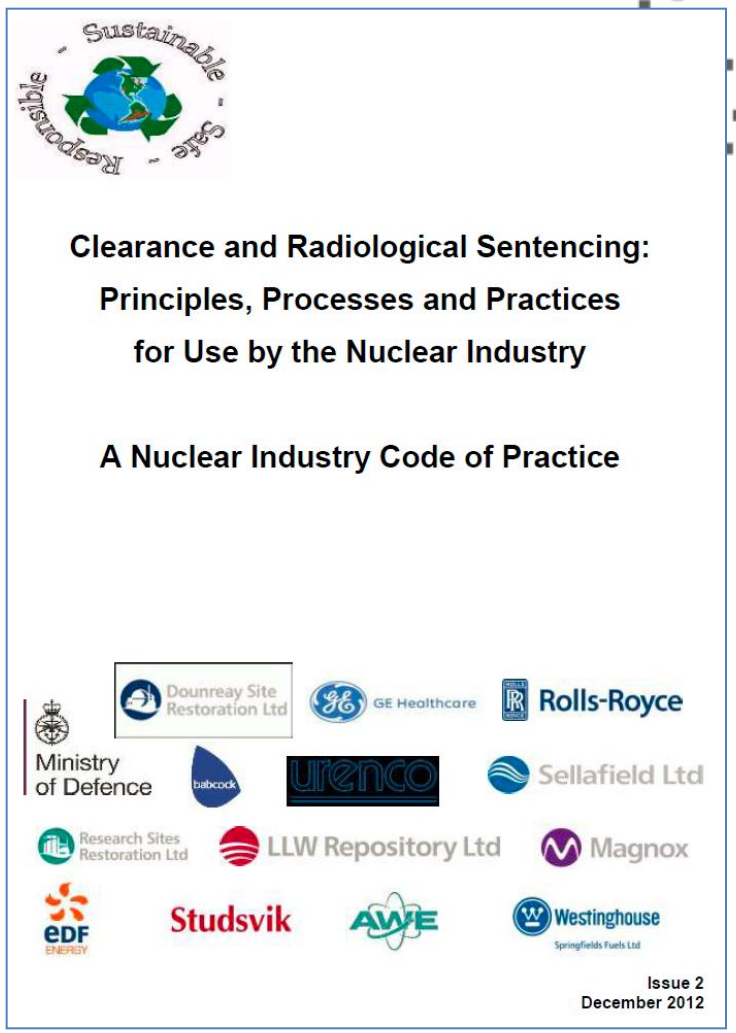
Provisional Results: *Standards and Guidance*

Current standards / guidance

- High level regulatory expectations
- Some detailed guidance on sub-topics
- Guidance not comprehensive (gaps)
- Use of international standards/guidance

Opportunities

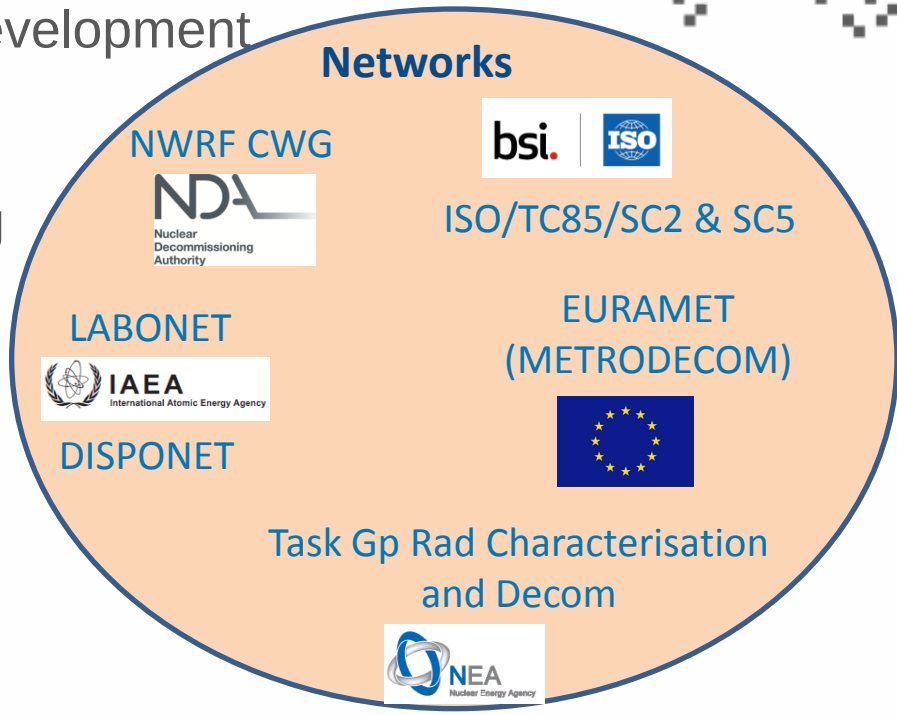
- Consensus on relevant / current international guidance
- Develop UK standards/guidance:
  - Point to good practice
  - Address gaps
    - Scaling factors
    - Uncertainty (sampling, heterogeneity, inaccessible areas)
    - Decommissioning
- Develop Nuclear Industry Code of Practice



Provisional Results: *Good practice sharing/learning from experience*

Current status

- UK involved in International working groups (IAEA, NEA, ISO, EU) & standards development
- Established national fora:
  - Solid waste characterisation
  - Radioassay/Discharge monitoring
- Sharing of practice:
  - Developing databases/guidance



Opportunities

- Transitioning national fora into networks/communities by:
  - Improve communication
  - Greater sharing of issues and solutions
  - Establishing stronger connectivity between expert groups
- Develop Knowledge Management (e.g. WIKI)

Provisional Results: *Resources and Capability*

Current status

- UK radioactive waste inventory; reporting tool
- Increasing reliance and demand on supply chain
- Limited supply chain resources, capability and infrastructure

Opportunities

- Improve medium/long-term planning
- UK radioactive waste inventory developed as planning tool
- Encourage partnership arrangements to develop:
  - New characterisation techniques
  - More effective use of resources
- Improve commercial arrangements to:
  - support the development of new techniques
  - encourage investment
  - bring improved characterisation techniques to market

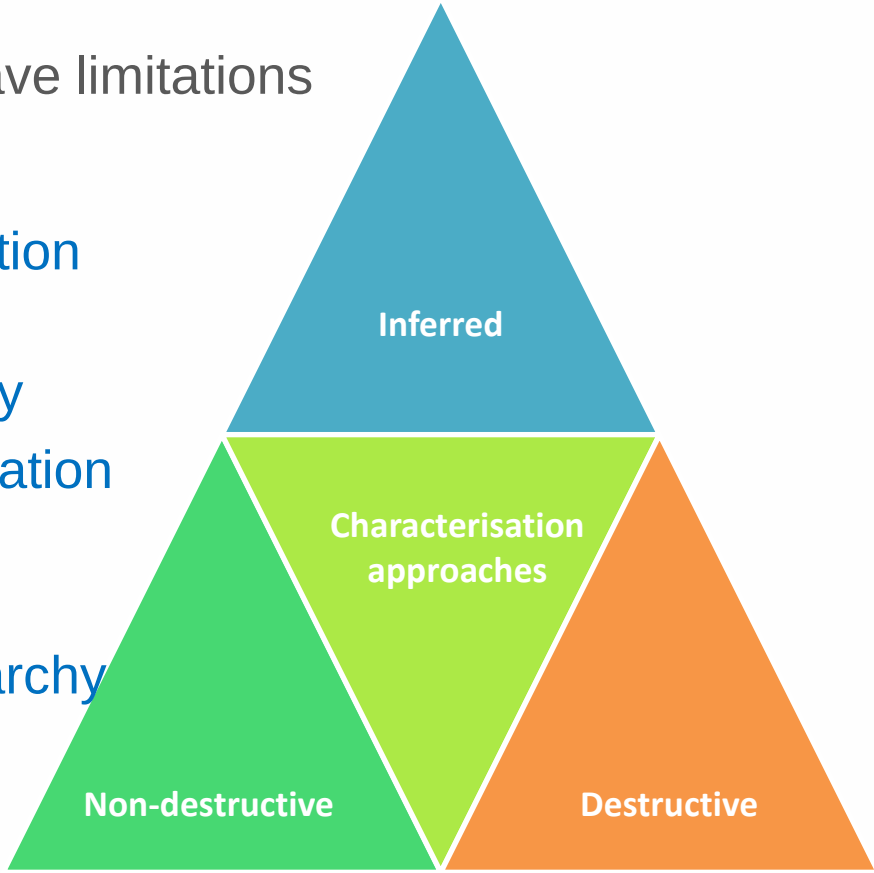
Provisional Results: *Implementation*

Current Status

- Lifecycle and systematic approaches to planning vary
- Changing Waste Acceptance Criteria & more disposal options
- Treatment of uncertainty is challenging
- Current characterisation techniques have limitations

Opportunities

- Establish UK guidance on characterisation planning and implementation.
- Develop approaches to treat uncertainty
- Develop approaches for sorting/segregation while considering waste heterogeneity
- Develop new techniques to support application of waste management hierarchy



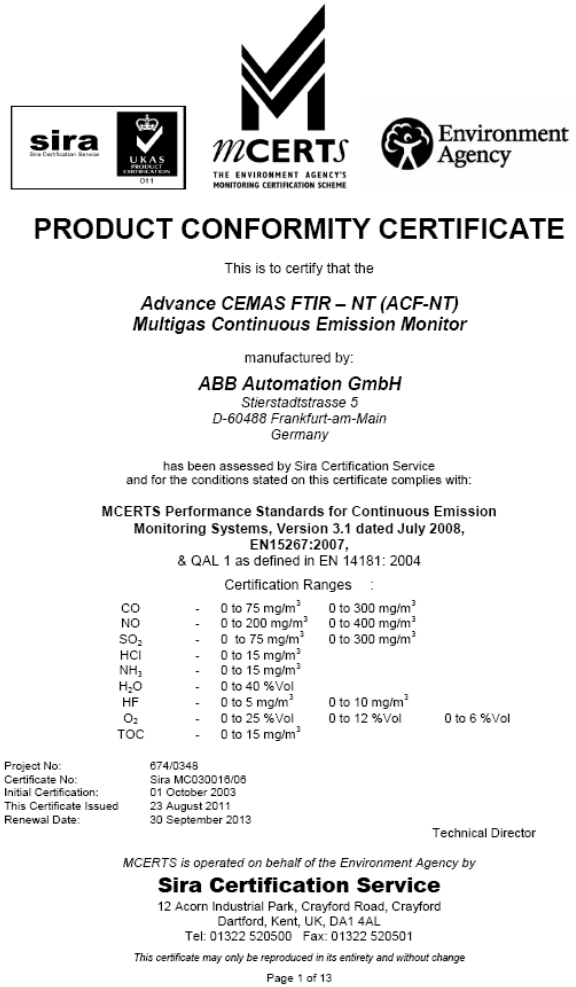
Provisional Results: *Quality Assurance*

Current Status

- Robust QA tool including:
  - Inspection and audit
  - Accreditation and certification of standards
  - Regulatory inspection
- Audits limited to review of paperwork
- Limited availability of reference material
- Limited inter-comparison exercises

Opportunities

- Develop guidance on independent assurance of characterisation data
- Generate reference materials to:
  - Facilitate inter-comparison exercises
  - Improve confidence in characterisation data accuracy



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Conclusions and Way Forward

Conclusions

- Review of UK (nuclear decommissioning) characterisation practice nearly complete
- Much good practice but opportunities to improve
- Collective understanding of opportunities is being established.

Way Forward

- 2016 Work:
  - Prioritise the opportunities
  - Enable efficient and effective implementation
- Aim to ensure efficient/effective characterisation practice as UK decommissioning challenge increases.