Evolving practice for assessing uncertainty and implementing risk management approaches for decommissioning projects over extended time periods

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Background

- NDA – created by Energy Act 2004 to manage UK civil nuclear legacy
- Range of facilities – legacy research facilities, Magnox power stations, reprocessing facilities, waste storage facilities
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17 sites
£117Bn
100+ years
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Presentation uses undiscounted numbers throughout
Funded by Government ... and on the Government balance sheet
Reported under International Accounting Standards (IAS37), with costs discounted to current values
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The result is a single point estimate that can be audited and which will only ever be precisely wrong, and not broadly right..
Not an easy message for stakeholders who want certainty and to see the number ‘reduce’
Change in estimates since 2005

Able to demonstrate reduction once certainty in plan and risk transfer to contractor (dark bar)
Increased understanding of technical complexity and uncertainty at Sellafield has led to increasing estimate
Lessons learned

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• Use a proportional approach to assessing risk and uncertainty over time;
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• Drive for increased certainty in near term (15-20 year) cost estimates;
• Use a proportional approach to assessing risk and uncertainty over time;
• Overtly including ranges around the central cost estimate to emphasise uncertainty in official publications
Magnox – drive near term certainty

- 10 stations, although they are all different designs and ceased generating at different dates (between 1989 and 2015); use lead and learn approach to share knowledge and gain certainty

- Accept that costs may initially go up as decommissioning plans are developed;
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- Accept that costs may initially rise as decommissioning plans are developed;
- Reductions then delivered against agreed plan through innovation and competition;
- With certainty comes the ability to achieve some risk transfer to contractors through use of target cost contracts (Dounreay 2012, Magnox 2014)
Use a proportional approach - Magnox

- Half of spend > 50 years time
- Little point in finessing estimates
- So uncertainty range is a very crude calculation of +/- 50% change in estimate, or timing changed by 10 years
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The work may will most likely be done by our grandchildren, using technology not yet invented; We do not know what society norms will be in 50 years, so do not waste time on detailed estimates
Use a proportional approach - Sellafield

- Baseline has been reset twice – 2011 and 2014, and still significant uncertainty in near term and increasing proportion of major projects
- Major projects are unique, one of a kind
Use a proportional approach – Sellafield (2)

Approached uncertainty by considering investment guidance and optimism bias provisions. NDA uses 4 classes (D-A) to provide a range for assessing uncertainty in the project estimates, which reduce as project maturity increases as follows:

[Diagram showing the range for each class (D-A) with a reduction in uncertainty as project maturity increases.]
Use a proportional approach – Sellafield (2)

Approached uncertainty by considering investment guidance and optimism bias provisions
NDA uses 4 classes (D-A) to provide a range for assessing uncertainty in the project estimates, which reduce as project maturity increases as follows:

- For major projects starting more than 20 years from now – accept that estimates are prepared using parametric modelling for this £25bn expenditure, and so are uncertain and no better than Class D
- So the £25bn cost may be £100bn or £12bn....
Overtly disclose uncertainty ranges

2005-2010
Ranges not disclosed
Audit focussed on single point estimate, with minimal tolerance
Centrally held ‘risk’ provision of £2bn
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2014-2016
Undiscounted cost range shown
Significant uncertainty in major project expenditure 20+ years into the future recognised
Range +£101bn/-£22bn
Conclusion

• A single number for decommissioning will be wrong;
• Focus on getting ‘certainty’ where possible;
• Use ranges to emphasise uncertainty and inform stakeholders where certainty is not possible
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• Recognise that what is important is delivering value for money and making real progress towards achieving the desired end state in a safe and secure manner
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