



NIGLQ

Nuclear Industry Group for
Land Quality

Land Quality Management Perspectives of the Nuclear Sector

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Nuclear Industry Group for Land Quality

- Originally established late 1990s by the nuclear industry's 'Safety Directors' Forum' as 'Inter-Industry Group on Contaminated Land Management and Site Restoration Issues' (IIG-CL)
- Renamed as NIGLQ in 2008, and now sponsored by the NDA 'Site Decommissioning & Remediation Theme Overview Group' (SDR-TOG)
 - The SDR-TOG reports to the Nuclear Decommissioning Authority Nuclear Strategy & Policy Group (NSPG)
 - **Membership and remit broader than NDA Estate**

NIGLQ Remit

- Improve effectiveness of LQ management (LQM) amongst Member Organisations, for both current conditions and for the long-term, out to the site end states (SES)
- Support NDA and site strategy development for LQM and SES
- Develop and present cross-industry views on LQ and SES matters to regulators and nuclear liability holders
- Support the nuclear safety and environmental regulators in the development of LQ and SES guidance
- Identify areas of improvement, prioritise improvement activities (including R&D) and support implementation
- Establish and maintain a community for ‘learning from experience’ and sharing and developing good practice in the field of LQM and SES within the nuclear sector
 - e.g. Guidance on qualitative risk assessment and on groundwater monitoring

NIGLQ Membership and Arrangements

- Members involved in LQM and SES matters
 - Focused on nuclear liability holders (NDA Estate and non-NDA operators)
 - 17 Member Organisations:
 - New nuclear build, operational and decommissioning
 - Civil nuclear and defence related
 - Meets two to three times a year
 - Chaired by Member Organisations
- NDA
 - AWE
 - DSRL
 - Dstl
 - EDF Energy
 - EDF NNB GenCo
 - Horizon Nuclear Power
 - LLWR
 - Magnox Ltd
 - MoD
 - NuGeneration
 - Rolls Royce
 - RWM
 - Sellafield Ltd
 - SFL
 - UNS
 - UUK

Addressing LQM Regimes for Nuclear Sites

- Regimes specific to LQM on nuclear sites:
 - Radioactively contaminated ground & groundwater regulated as radioactive material under **Nuclear Installations Act (NIA)** and associated Site Licence Conditions
 - **Radioactive Substances Regulation (RSR)** regime applies (indirectly) if radioactively contaminated ground is to remain after release of site from regulation
- Part IIA radioactive contaminated land regime **does not** apply to nuclear licensed sites
- For other LQM regulatory regimes, nuclear sites expect to be regulated in a manner consistent with other industrial sites
- Integration of radioactive and non-radioactive LQM may present site-specific challenges

The Regulators

- Site Licence Conditions under the NIA regulated by the **Office for Nuclear Regulation (ONR)**
- RSR regulated by the **environment agencies** under the Radioactive Substances Act 1993 (RSA 93) (soon to be the Integrated Authorisation Framework) in Scotland and the Environmental Permitting Regulations 2016 (Schedule 23) in England and Wales:
 - Scottish Environment Protection Agency (SEPA)
 - Natural Resources Wales (NRW)
 - Environment Agency

Overview of Developing Areas of Nuclear Site LQM Regulation

- Possible alternative to 'de-licensing' (and 'no danger' criterion) for release from NIA:
 - possibility to surrender Nuclear Site Licence if regulation of site under RSR will continue
 - 'complete' clean-up of land may not be required
- New 'Guidance on Requirements for Release of Nuclear Sites from Radioactive Substances Regulation' ('GRR')
 - Will require radioactively contaminated ground & groundwater to be taken into account in a "site-wide environmental safety case" (SWESC)
- Clarification of implications of 2006 'Groundwater Daughter Directive' (GWD)
 - e.g. for disposal of radioactive waste within the zone of saturation

Nuclear sites: Life-cycle stages

- Nuclear new build sites
- Operational nuclear sites
- Decommissioning nuclear sites
- Decommissioned sites with nuclear next use
- Decommissioned sites with non-nuclear next use
- Nuclear sites with different stages in parallel, and/or zoned
 - e.g. Sellafield, Dounreay



LQM for nuclear new build sites

- Baseline land quality (greenfield or brownfield)
- Access to or acquisition of land on adjoining nuclear site
- Groundworks issues
 - Excavated spoil management
 - Natural materials
 - Non-natural materials (e.g. concrete, asbestos, hydrocarbons)
 - Groundwater management
 - Impacts of dewatering on adjacent land / structures
 - Discharges from dewatering
 - Long-term stockpiling / landscaping
- EIA for Development Consent Order (DCO)

LQM for Operational Sites

- Management of any radioactive land contamination under Nuclear Site Licence Conditions
 - Regulated by ONR
- Management of any non-radioactive land contamination
 - Regulated as for non-nuclear sites
 - Applicable environment agency usually takes the lead
 - Local authority Contaminated Land Officer may lead in some circumstances

LQM for Decommissioning Sites

- Regulation of existing land contamination as for operational sites
- Planning permission often required (may have LQ aspects):
 - Installation of groundwater monitoring boreholes where not covered by permitted development rights
 - New buildings for radioactive waste operations
 - Some demolition activities
- Enabling consents / arrangements may be required
 - Environmental consents for remediation operations
 - CL:AIRE DoWCoP for some non-radioactive infilling/landscaping
- RSR authorisation required for any on-site disposal of radioactive waste ('GRR')

LQM for Decommissioned Sites with Non-nuclear Next Use

- Objective is eventual release from nuclear regulation (NIA and RSR)
- Radioactive land contamination remaining after release from RSR must be shown to be 'safe' in Site-Wide Environmental Safety Case ('GRR')
- Non-radioactive land contamination remaining after release from RSR must be consistent with next planned use (i.e. regulated under Planning regime)

LQM examples from Magnox Ltd

- Various remediation projects
- Each with a different main objective/driver
- Each with a different main regulatory regime
- Varied use of regulatory and/or good practice guidance
- All within the guiding principles of CLR-11, SAFEGROUNDS, etc:
 - Conceptual site model, risk assessment, characterisation
 - Remedial options appraisal
 - Remediation design & implementation
 - Verification and monitoring, with records

On-site Radioactive Waste Disposal Concept

- **Objective:** Optimise final end state, which may include residual radioactivity in structures, in-situ ground and deposited materials
- Primarily RSR matter ('GRR')
- Potential influence of GWD



Below-ground structures of Trawsfynydd Site's two power reactors under construction in 1960, including cylindrical concrete 'biological shields'

Alternative Approaches to Generic Principles for LQM for Nuclear Sites

- Magnox Reactor Sites – multi-site organisation
 - High level corporate principles and ‘procedure’
 - Main focus is on Nuclear Site Licence and RSR regime
 - LQ APC ‘sentencing’ process to deliver ‘fit for purpose’ land condition for multi-decade quiescent phase at each site
 - Reliance on supply chain consultants to navigate applicable non-radioactive LQM regime(s)
- Dounreay – complex single site
 - Site-specific framework and detailed procedures
 - Seek to meet all applicable LQM regimes via adherence to site procedures
 - Supply chain directed to follow site procedures & reporting templates

Closing Remarks: Benefits of Updated 'GPLC' for Nuclear Sector?

- Support for consistent regulation of non-radioactive LQ across nuclear and non-nuclear sites
- Signposting of good practice guidance relevant to LQM
- Beneficial for regulators as well as operators
 - e.g. common point of reference for nuclear environmental regulators (site inspectors) and non-nuclear colleagues
- Role of NIGLQ in sharing of information and providing input and feedback