[Form 2 (to be reported to Committee on Countermeasures for Contaminated Water Treatment and to be disclosed to public)

Technology Information	
Area	1, 2, 3, 4, 5 (Select the number from “Areas of Technologies Requested”)
Title	Application of options assessment to support stakeholder communications
Submitted by	UK National Nuclear Laboratory (NNL)

1. Overview of Technologies (features, specification, functions, owners, etc.)

The high level principles for countermeasures to address contaminated water at the Fukushima site are to (a) remove the source, (b) isolate the groundwater from the source, and (c) prevent leakage of contaminated water.

In order to successfully achieve these objectives, justification for the proposed countermeasures needs to be communicated to stakeholders. A transparent options assessment process that takes account of stakeholder concerns and that provides visibility of the evidence and logic used to arrive at a preferred management approach, is beneficial in supporting communications with stakeholders. This demonstration of the decision making process is often an integral part of safety cases.

Regulatory and stakeholder support for a proposed option is likely to require demonstration that best available techniques (BAT) have been considered and employed, through consideration of nationally and internationally recognised examples of ‘good practice’ and also emergent and ‘novel’ technologies. However, the requirement for hazard reduction at the site on a relatively rapid timescale, leads to restrictions on the timescales for implementation of any countermeasures and therefore immature or more novel technologies may not be appropriate.

Adoption of a formal options assessment process could support regulatory and stakeholder communications regarding, for example, the treatment of contaminated water containing tritium. Options could be assessed against criteria relating to the following aspects:

- Safety and Environment
- Economic
- Social.

The National Nuclear Laboratory has extensive experience in supporting options assessments and BAT assessments relating to the treatment and management of effluents, wastes and ground contamination, including:

- review of national and international ‘good practice’ on effluent treatment techniques

applicable to the nuclear industry to support BAT arguments required for compliance with site Environmental Permits.

- review of national and international developments in remediation technologies and of potential options to reduce impacts from radioactive waste disposals at a site. An assessment of remediation options against the site specific conditions was undertaken to provide a remediation toolbox to support work to demonstrate optimisation.
- input to Best Practicable Environmental Option (BPEO) assessments for the selection of a waste repository engineering design, input to engineering performance modelling and definition of design criteria.
- development of an integrated waste management approach for irradiated graphite as part of the collaborative European Project 'Treatment and disposal of irradiated graphite and other carbonaceous waste (Carbowaste)' to enable strategy options for the management of irradiated graphite to be evaluated using multi-criteria decision analysis (MCDA)
- regulatory and stakeholder engagement on projects relating to contaminated groundwater and waste disposal, including presentations and developing constructive dialogue with regulators and stakeholders and engaging with stakeholders through external advisory groups to attain buy-in to proposed methodologies.

2. Notes (Please provide following information if possible.)

- Technology readiness level (including cases of application, not limited to nuclear industry, time line for application)

9 – applied approaches to assess options at nuclear sites.

- Challenges

- Others (referential information on patent if any)