

DETERMINING A STRATEGY FOR MANAGING RADIOACTIVE PARTICLES IN THE ENVIRONMENT

THE CONSULTATION PROCESS

BACKGROUND

During historic fuel reprocessing operations associated with the research programme at Dounreay particles were released into the environment, mainly via the active liquid drainage system.

Since 1983 over 1400 small fragments of irradiated nuclear fuel and irradiated steel, referred to as 'particles', have been found in the environment around the Dounreay site.

UKAEA has investigated the source and fate of particles in the environment and is now developing a strategy to deal with this issue. Independent experts have studied potential health risks and have also provided major reports on work carried out by UKAEA and others.

THE BPEO ASSESSMENT PROCESS

UKAEA has adopted the best practicable environmental option study method as an aid to decision-making. The BPEO approach is an open and transparent process that assesses options against pre-selected criteria that include environment, health and safety, technical, social and economic, and cost considerations. The approach encourages the participation of stakeholders throughout the development and implementation of the BPEO.

CONSULTATION PROCESS

A number of steps have been included in this consultation to ensure complete transparency of the process. These are as follows:

- Establishing an independent external consultation steering group (ECSG)
- Consulting on the completeness of the identified options and assessment criteria
- Establishing a Scoring Panel to screen and score the the options against the criteria
- Consulting on the relative importance of the assessment criteria to help determine a preferred option(s)

External Consultation Steering Group

The ECSG was established to oversee the consultation process and to advise on the format and design of public events, exhibitions and information. The steering group is chaired by Councillor Bill Fernie (member of the Highland Council) and will continue to provide advice until the BPEO is finalised.

Consulting on the completeness of the identified options and assessment criteria

In 2006 UKAEA held public exhibitions, facilitated discussions and distributed questionnaires to allow the public to indicate how particles impacted on their everyday lives and whether they wished other options or assessment criteria to be included in the process.

Exhibitions were attended by 219 people, 15 outreach meetings were attended by 89 people and 123 questionnaire responses were returned.

An independent consultancy, Entec UK Ltd, contracted by UKAEA, provided facilitation of the consultation process, an analysis of the responses and made a number of recommendations for UKAEA to consider. As a result, the list of options (the long list) and the assessment criteria were expanded and revised.

Scoring Panel

A Scoring Panel was established to consider the long list of options. This comprised four UKAEA staff (two directly involved in the particles project) and five independent members specialising in environmental issues, coastal/marine engineering, socio-economics, health and safety.

The Scoring panel process was independently facilitated and a member of the ECSG observed. The panel met twice, firstly to agree the methodology for screening, scoring and combining options and secondly to screen and score the options against the criteria. A record of this meeting is available on the website.

COMPARING THE OPTIONS

To assess the performance of options a set of criteria was developed, consulted on and subsequently revised. The final list of criteria are presented in the following table.

The assessment criteria

Group	Criteria	Sub-criteria
Environment	Flora and Fauna	Onshore flora and fauna Offshore flora and fauna
	Physical environment	Air quality Water quality Land quality Particle contamination onshore Sea floor quality Particle contamination offshore Visual impact Nuisance Environment hazard Cultural heritage
	Waste	Radioactive waste Non-radioactive waste
	Resource usage	Energy Water Materials
Health & Safety	Public health and safety	Public radiological risk Public non-radiological risk
	Worker health and safety	Worker radiological risk Worker non-radiological risk
Technical performance	Deliverability	Regulatory and legislation implications Permanence of solution
	Viability	Feasible technology Proven technology
	Flexibility	Compatibility with other options Ability to cope with change in circumstances
	Scope for corrective action	Scope for corrective action
Socio Economics	Socio-Economic impacts	Economic impacts Tourism Quality of life
Cost	Cost	Cost

The options

As a result of this work, the Scoring Panel identified 11 combined options (the short list) which performed the best against the assessment criteria. The options are presented in the following table.

Combined option no	Onshore/offshore option numbers	Description
*1.	2 and 10	Onshore monitoring with recovery <i>plus</i> Offshore monitoring without recovery
2.	2 and 11	Onshore monitoring with recovery <i>plus</i> Offshore monitoring with recovery
3.	2 and 13	Onshore monitoring with recovery <i>plus</i> Offshore targeted recovery of detectable individual particles.
4.	2 and 15	Onshore monitoring with recovery <i>plus</i> Recovering offshore particles by the targeted bulk removal of marine sediments.
5.	3 and 11	Onshore recover all individual particles at all depths <i>plus</i> Offshore monitoring with recovery
6.	3 and 13	Onshore recover all individual particles at all depths <i>plus</i> Targeted recovery of detectable individual particles offshore
7.	3 and 15	Onshore recover all individual particles at all depths <i>plus</i> Recovering offshore particles by the targeted bulk removal of marine sediments
8.	4 and 13	Onshore bulk removal of individual particle at all depths <i>plus</i> Targeted recovery of detectable individual particles offshore
9.	4 and 15	Onshore bulk removal of beach sediments <i>plus</i> Recovering offshore particles by the targeted bulk removal of marine sediments
10.	7 and 13	Onshore restrict public access <i>plus</i> Targeted recovery of detectable individual particles offshore
11.	7 and 15	Onshore restrict public access <i>plus</i> Recovering offshore particles by the targeted bulk removal of marine sediments.

* *current management strategy (pre-BPEO).*

A full description of the options is available on the UKAEA website.

CONSULTING ON THE RELATIVE IMPORTANCE OF THE ASSESSMENT CRITERIA

UKAEA presented the work by the Scoring Panel and encouraged people to come forward with views on the relative importance of the assessment criteria at group level.

During January/February 2007, exhibitions in Thurso, Wick, Reay and Castletown were held, followed by eight panel meetings with a variety of stakeholders to allow discussion on this issue. A newsletter was also widely distributed which included a questionnaire.

The facilitator, Entec UK Ltd, analysed and reported on the responses from the exhibitions, panel meetings and questionnaire. Conclusions were made from the responses and recommendations made regarding integrating stakeholder concerns into the BPEO process.

Stakeholder panel meetings

Across the 8 panel meetings the following were concluded:

- Environment is generally the highest weighted criterion
- Social and economic criteria generally received the second highest weighting
- Health and safety received a mixed picture – this criterion was second most important to half of the groups and of least/second importance for the other half
- Technical performance received mid-weighting
- Cost was generally the lowest weighted criterion

With regard to option preference, the following was found (*refer to table for description – combined option no*).

- Options 1, 2 and 3 consistently scored well across all of the groups.
- Options that entailed more extensive onshore and offshore work such as turning over beaches and offshore dredging (options 4 to 9 and Option 11) scored poorly relative to Options 1, 2 and 3.
- Option 10 which included restricting access onshore fared better than the other lower scoring options. This was a function of the options good environmental and health and safety performance compared to others and the high weighting typically placed on the environment criteria.
- Option 10 was, however, ruled out by groups due to its poor performance with regard to the social and economic criterion.

RESULTS OF WIDER CONSULTATION

Seventy responses were received in written form from respondents to the newsletter and details are provided in Entec's report. The main conclusions were:

- Views on the most preferred options were broadly in line with the output of the panel meeting views.
- The detail shows a greater preference for Options 2 and 3. This would appear to reflect the unacceptability of Option 1 as it does not deal with the issue offshore.

OPTION PREFERENCES

When considering feedback from the exhibitions, stakeholder panels and written responses the headline messages were:

- **Doing nothing** was not acceptable.
- **The status quo was not acceptable.** The current management technique which does not include recovery of particles offshore is not acceptable.
- **Options 1, 2 and 3 were preferred.** This was arrived at both intuitively by stakeholders in the workshop groups and through the results of the weighting of assessment criteria. Taking into account the conclusion that offshore recovery is necessary, Options 2 and 3 become the most preferred options with which to move forward.
- **The sensitivity of the weighted options.** Due to the low sensitivity of the weighted scores, variations in criteria weight patterns do not result in options other than Options 1, 2 and 3 scoring significantly better than all the others. It can be concluded that Options 1-3 are therefore robust. They score well across all criteria and would meet the needs of a range of stakeholder priorities (with the exception of Option 1 due to the lack of offshore particle recovery).
- **Options with high environmental impact and/or low social and economic benefits are not preferred.** Examples of these are options 10 and 11, which include restricting public access onshore and Options 7, 9 and 11 which include targeted bulk removal (dredging) of marine sediments.
- **Stakeholders see a combination of options as appropriate.** Rather than a 'one size fits all' approach, stakeholders were of the view that over time, different options might be more appropriate. A combination of options may also be appropriate at any one point in time such as that currently in place along the Dounreay foreshore, where access is restricted.

- **Action is still required to address the perception issue.** Whatever the management strategy pursued, there will be a continued need to provide accurate and timely information to stakeholders.

RECOMMENDED WAY FORWARD

In considering the information from current studies, independent reports and stakeholder feedback, UKAEA makes the following recommendation:

- **Option 2;** Onshore monitoring with recovery *plus* Offshore monitoring with recovery and/or
- **Option 3;** Onshore monitoring with recovery *plus* Targeted recovery of detectable individual particles offshore

are selected as the clean-up option combinations of choice.

This is outlined in the preliminary BPEO.

NEXT STEPS

This is the final stage of the consultation process. The preliminary BPEO is now available for final comment (closing date is 10th December 2007). Public participation newsletter no 7 summarises the BPEO. A questionnaire is also available to help you feedback your views.

This can be found on the website at

http://www.ukaea.org.uk/sites/dounreay_particles_in_the_marine_environment.htm

Once feedback is provided the BPEO will be finalised, made publicly available, and submitted to SEPA in January 2008.

A programme of work to carry out the preferred BPEO will be identified and agreed with key stakeholders and information will be made available on progress.

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