





# 1 Introduction

This document sets out the Quintessa Limited's response to the government's consultation on decommissioning policy outlined in 'Modernising the Policy for Decommissioning the UK's Nuclear Facilities', published by the Department of Trade and Industry and other government bodies in November 2003 (DTI et al, 2003).

Quintessa is an Anglo-Japanese scientific and mathematical consultancy company specialising in strategic and safety issues relating to the management of radioactive waste and radioactively contaminated sites. Over the past five years, Quintessa has worked for thirty organisations concerned with the regulation and management of nuclear sites and radioactive materials in sixteen countries. Several staff at Quintessa have over twenty years experience in the field.

Quintessa's motivation in responding to the present consultation exercise is to aid the development of a well-founded, robust and coherent basis for decommissioning in the UK. As such, we are generally supportive of the main thrust of the proposals for revising and updating the policy. In addition, our response is intended to raise issues that we believe may require some further consideration or clarification in order for the policy to be effectively implemented.

In what follows, our comments are largely associated with the key themes of the document, and have therefore been organised to reflect the key proposals indicated in paragraph 20 of the consultation document. These are presented in Section 2. In addition, we provide some observations associated with specific statements and wording in the proposed policy. These are included in Section 3.

## 2 Key Proposals

### 2.1 Objectives of Decommissioning

*The government proposes to reaffirm that the core principles of decommissioning policy (as set out in paragraph 7.38 in the white paper "Managing the Nuclear Legacy" and Cm 2919) are sound and still apply – in particular that decommissioning must be conducted as soon as reasonably practicable in a manner which is safe, secure, efficient and cost effective, and represents BPEO for the site.*

Quintessa supports the basic principles for decommissioning. We note that although *Managing the Nuclear Legacy* includes a commitment to 'progressively reduce hazards' it does not make reference to the need to provide long-term protection of people and the environment once decommissioning operations have been completed. Cm 2919 makes reference to such a principle, but only in relation to the disposal of radioactive waste. Many stakeholders view this to be a key principle, as evidenced by the SAFEGROUNDS project (CIRIA, 2002). Establishing a clear understanding of the end points of decommissioning and site clean up is also a key consideration in relevant guidance issued by the International Commission on Radiation Protection (ICRP, 1999). Clarification of long-term objectives for protection may prove to be an essential aspect in the development of decommissioning strategies by site operators.

We agree that decommissioning plans should reflect the Best Practicable Environmental Option for each site. This ensures that planning takes account of a broad range of factors in an open way, and seeks to identify the option that best satisfies these factors, taking into account a range of viewpoints and values. We also note that the UK will implement the European Directive on Strategic Environmental Assessment in the summer of 2004. This is also relevant to the implementation of decommissioning policy (especially at the level of broader strategic planning) and it would may prove helpful to offer guidance on its application in the development of decommissioning strategies.

## 2.2 Scope of the Policy

*The government proposes to make it clear that the policy applies to all of the UK nuclear industry's facilities rather than to its reactors alone.*

Cm 2919 took a narrow view of decommissioning that focused on reactors. We welcome the broader scope of the policy, which recognises that a range of challenges are to be faced in decommissioning the UK's nuclear facilities.

## 2.3 Decommissioning Practice

*The government proposes to clarify what decommissioning means in practice, in particular that it includes the need to remediate and, where practicable, to restore associated land, and that the future use of the site will be an important factor in determining the decommissioning operations to be carried out.*

Quintessa welcomes the increased emphasis, compared with earlier policy, on the remediation and restoration of land on former nuclear sites.

## 2.4 Site End Points

*The government proposes to recognise that restoration to unrestricted use may not always be the BPEO for the site of a decommissioned facility, that the policy needs to be flexible enough to allow for a range of possible end points reflecting the intended future use of the site, and that achievement of any given end point will be a progressive process which, in most instances, will span a number of decades.*

Quintessa understands that the government's proposal is intended to encourage decommissioning and site restoration in all circumstances, even when restoration to 'unrestricted use' would require grossly disproportionate expense and effort.

The implication of such a policy is that the safety of a decommissioned site can be ensured by controlling its end use, thereby limiting the potential exposure pathways

from the site. We recognise that this is consistent with aspects of the regulatory approach for non-radioactive contaminated land.

However, the hazards from residual radioactivity may persist for many hundreds or thousands of years, and land use controls cannot be relied upon over such timescales. This view is almost universally adopted in respect of the long-term protection of people and the environment in relation to the disposal of radioactive waste. For example, UK regulatory guidance (Environment Agency et al., 1997) only recognises a benefit in ‘institutional controls’ for a few hundred years when assessing long-term safety. ICRP (1999) advocates a similar approach to long-term protection in dealing with residual contamination from past practices, suggesting that the evaluation of long-term risks should be based on the assumption of unrestricted use (i.e. without control). Although ICRP indicates that, in some situations, long-term restrictions may be the optimum outcome, it nevertheless recommends that the possibility of failure of controls should still be taken into account in determining the acceptability of risks presented by residual contamination.

It is also relevant to note that ICRP is in the process of significantly revising its overall guidance on dose criteria. Amongst other improvements, the new guidance (expected next year) will include further discussion of the application of very low dose targets (e.g. tens of microSieverts per year). Such guidance could have an influence on perceptions regarding the practicability of unrestricted use as an objective for all the UK’s nuclear facilities.

Clearly, there are differing approaches and standards that can be applied to protect people and the environment. It would be of benefit for the basis for government’s proposals in this area to be expanded upon, for example in terms of the extent to which controls on land use are viewed as permanent or interim control measures, although it is recognised that this may not be appropriate within the policy itself.

## 2.5 Consultation

*The government proposes to make clear that decisions on end points should only be reached after consultation with local communities and other stakeholders.*

Quintessa supports the policy of consulting all relevant stakeholders when planning decommissioning. We suggest that it would be of benefit for guidance to be available to support the policy. This should consider the scope of consultation and approaches

and methods for undertaking it. The issue was considered in SAFEGROUNDS project, which has published relevant information (Collier, 2002).

## 2.6 Safety Standards

*The government proposes to recognise the importance of restoring sites of decommissioned nuclear facilities to high standards of safety consistent with their designated future use.*

We welcome the government's commitment to high standards of safety. Specific guidance is also required to set out the safety standards, and it is anticipated that the forthcoming guidance from HSE on the interpretation of the requirements for de-licensing nuclear sites will set this out. This would be best issued at a similar time to the policy.

## 2.7 Wastes Arising from Decommissioning

*The government proposes to make clear that, given the long time scales for identifying and implementing final management solutions for radioactive wastes, interim storage will become increasingly important, and increasing amounts of arising wastes may need to be stored in passively safe forms.*

Quintessa agrees that the availability of long-term management routes for radioactive wastes is key issue. Long-term waste management options are currently under review via the *Managing Radioactive Waste Safely* process. Even following the advice of the Committee on Radioactive Waste Management (CoRWM), the development of long-term waste management facilities for long-lived, more active wastes will probably take many years.

Interim storage is an appropriate practical solution for wastes that have significant concentrations of radioactivity, and do not arise in large volumes. However, decommissioning has the potential to generate very large volumes of lightly contaminated demolition waste, for which storage would be very expensive and transport to centralised national facilities may be inappropriate. There are at present no well established routes for such wastes, as the UK's current LLW facility at Drigg has restrictions on the acceptance of decommissioning wastes. Moreover, no other facilities of significant capacity exist. Consequently, there has been considerable debate

concerning the management of these wastes. Although it is not the direct responsibility of decommissioning policy, the issue is a potential constraint on progress with decommissioning and the importance of waste management routes should therefore be indicated in the policy. In Quintessa's view, the development and implementation of a co-ordinated approach to managing large volume, low activity wastes is a relevant component of the *Managing Radioactive Wastes Safely* process.

## 2.8 Flexibility and Proportionality

*The government proposes to underline further that the regulatory framework is flexible enough to enable the regulators to apply a proportionate level of control throughout decommissioning as the hazard posed by a site reduces.*

Quintessa strongly agrees with the need to apply a proportionate level of control during the decommissioning process, and notes that continued nuclear site licensing is only one of available routes that might be followed.

## 2.9 Best Practice

*The government proposes to lay greater emphasis on the need to develop and share best practice, in line with the principles underpinning the creation of the NDA.*

Quintessa supports the government's encouragement of best practice. In order to foster best practice, consideration should be given to how research and development requirements can be most effectively identified and prioritised as part of a co-ordinated process.

In the past, government agencies co-ordinated a range of different research programmes. There is a risk that the disaggregation of the industry may lead to a loss of focus in core research and development. Therefore, it may be of benefit to consider the opportunities for the Nuclear Decommissioning Authority and the nuclear industry to co-ordinate research activities, particularly in the area of waste and decommissioning.

### 3 Specific Comments on the Proposed Policy

The suggestions below, ordered by paragraph of Annex A to the consultation document, are intended to ensure clear presentation of the proposed policy.

#### *Paragraph 3*

Care is required when suggesting that decommissioning can be delayed to wait for new technologies to emerge. It would be of benefit to emphasise that precautionary arguments should not result in decommissioning being deferred inappropriately.

#### *Paragraph 5*

The factors in developing a strategy should include reference to a long-term safety objective for the site, once decommissioning of facilities has been completed.

#### *Paragraph 6*

It would be useful to clarify that 'unrestricted use is possible' should be interpreted to mean 'unrestricted use will not lead to hazards from the residual radioactivity that exceed targets for safety and environmental protection'.

The policy suggests that 'future uses' for decommissioning sites cannot be defined well before decommissioning starts. In practice, general clean up targets for different potential uses of the site can be defined at an early stage, and may greatly benefit the development of decommissioning strategy. Furthermore, the selection of a particular site end point and its incorporation in decommissioning strategy does not necessarily foreclose other options.

#### *Paragraph 8*

The meaning of the first sentence requires clarification.

#### *Paragraph 21*

It is agreed that decommissioning operations and costs should be considered when new facilities are designed. However, it should be clear that other factors must be considered in the decision-making process, such as safety and environmental performance in the short and long-term.

## References

CIRIA (2002). SAFEGROUNDS Good Practice Guidance for the Management of Contaminated Land on Nuclear and Defence Sites. September 2002.

Collier D (2002). Community Stakeholder Involvement. SAFEGROUNDS Paper, September 2002.

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