# CoRWM response form

## Public and Stakeholder Engagement: 4 April to 27 June 2005

The Committee on Radioactive Waste Management (CoRWM) invites you to take part in this consultation. Please respond before the end of the consultation period so that we have time to process your comments fully.

The consultation document is available from CoRWM and from the CoRWM website.

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| Responses can be returned by email to<br><br>**contact@corwm.org.uk**<br><br>or by post to:<br><br>**CoRWM Office**<br>**4/F8 Ashdown House**<br>**123 Victoria Street**<br>**London SW1E 6DE** | If you have any questions regarding the content of the consultation document, or any questions or complaints regarding this public and stakeholder engagement process, please write to CoRWM. Alternatively you may:<br><br>telephone Chris or Sam on<br>**020 7082 8496 / 8491 / 8470**<br><br>fax **020 7082 8495**<br><br>email **contact@corwm.org.uk**<br><br>**www.corwm.org.uk** |

CoRWM welcome your comments on any part of the consultation document or our work.

Questions starting with numbers 1 - 4 refer to the numbered sections of the consultation document. Questions 5 and 6 invite feedback on the consultation and CoRWM's work.

1. **Narrowing down the options: a proposed short-list**
2. **Assessing the short-listed options**
3. **Combining options**
4. **Thinking ahead: *implementation***
5. **Comments on this consultation**
6. **Other comments**

**You may like to respond to all of these questions, or just a few.**

***Please enter an 'X' in a box and comment in the spaces between the questions.***

***Please include a name and postcode at the end.***

# 1. Narrowing down the options: a proposed short-list

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| **1.1** | Has CoRWM short-listed any option(s) that you think should be screened out?<br>If so, why should we eliminate it? | Yes | |
| | | No | **X** |
| | | Don't know | |

However (see also our response to question 2.1), we are concerned that the options are not strictly alternatives and this will – or at least should – have a fundamental impact on the way that they are assessed and compared. The short-listed options cannot be lined up one against the other on an entirely equivalent basis, because they effectively address different intentions. Given that 'storage forever' has been excluded from the analysis, the central question is whether it is appropriate to start now with implementing an intended permanent solution or if that action should be deferred for others to implement in future.

We nevertheless accept that the consultation paper makes it clear that CoRWM recognises that some options are partial solutions at best, and that there is need to move beyond a focus on individual options (as used in short-listing) to look at possible combinations of options.

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| **1.2** | Has CoRWM screened out any option(s) that you think should be short-listed?<br>If so, why should we retain it? | Yes | **X** |
| | | No | |
| | | Don't know | |

We do not understand the rationale for screening out the option of sub-seabed disposal, accessed from land, and are not convinced that it would be manifestly in breach of international conventions. A reason for retaining the option (as a siting variant for deep geological disposal) is that it offers the possibility of greater robustness to the safety case from the perspective of hydrogeology. In practice, such a possibility might come at the expense of greater difficulty in characterisation; nevertheless, we feel that screening may be premature.

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| **1.3** | CoRWM invites comments on some of the options (consultation document pages 16-23). |

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| (i) | **Storage forever**: the definition of indefinite storage has changed. CoRWM invites feedback on the option now called 'storage forever' and the proposal to screen it out. |

It is meaningless to suggest that any administration could make a commitment to 'storage forever'. We can opt to plan for storage, on the basis that we intend to maintain those arrangements into the foreseeable future; however, we cannot commit others in the future to preserving our wishes. If we accept that the passing on of responsibility carries with it the freedom for future generations to decide, then this must include the possibility of being able adopt alternative arrangements. On that basis, there is actually no such option as 'storage forever', only indefinite storage.

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| (ii) | **Long-term interim storage**: the definition of long-term interim storage has been changed and clarified. We therefore invite feedback on this option, on the two intentions, and on CoRWM's proposal that it should be short-listed. |

We agree that the option of long-term interim storage can be considered to accommodate two different intentions, i.e.:
a) to identify a preferred option or options, but to defer implementation, for example, until there is sufficient confidence to proceed; or
b) delaying a decision until, at a point in the future, there is enough information to decide which of one or more options should be implemented.

We believe that consideration of such intentions highlights the fundamental choice to be made in relation to long-term waste management – drawing a balance between confidence in the projected impact of 'final' solutions and the perceived value of providing flexibility by delaying and/or deferring the implementation of such solutions to an undetermined time in the future. We recognise that there are differences of opinion on such matters and that these considerations lie at the centre of the recommendations that CoRWM will be making.

However, a decision to defer or delay should also be clearly recognised as a decision, and that such a decision is itself not without uncertainties as to its impact. Ultimately, any decision to allow choices to remain open in respect of the handling of existing identified hazards carries with it the burden of requiring others to take care of the problems we pass on to them and – effectively – a belief that they will handle such problems at least as well as we do today. In this context, the principle of inter-generational equity (as with the precautionary principle) does not therefore present a simple ethical choice, decisions must be made in the face of uncertainty and without the benefit of hindsight.

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| (iii) | **Near-surface disposal for long-lived wastes**: comments on near-surface disposal specifically for long-lived wastes were not sought in the first round of consultation, so CoRWM invites feedback on the proposal to screen out this option. |

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| (iv) | **Near-surface disposal for short-lived wastes**: comments on near-surface disposal specifically for short-lived wastes were not sought in the first round of consultation, so CoRWM invites feedback on the proposal to short-list this option. |

We agree that it is appropriate to separate out the potential for near-surface disposal to act as management solution for short-lived wastes from its possible application to long-lived wastes. Indeed, we believe that the fact that the UK has continued to focus almost exclusively on present-day activity levels (and heat generation) as the basis for determining long-term management solutions may have led to inappropriate decisions being made for some waste streams. The primary reason for considering long-lived and short-lived wastes separately is that it opens up the potential for more timely and cost-effective solutions to be identified for certain categories of more active waste, while ensuring that long-term hazards are addressed via appropriate long-term solutions. For example, there can be more confidence that a near-surface disposal facility will not be disrupted over a period of (say) 300 years, as a result of future human actions or natural environmental change, than over many thousands, or tens of thousands, of years.

Nevertheless, we would draw a note of caution: there is not always an easy separation between short- and long-lived wastes and there will typically be a residual long-lived component of many so-called short-lived wastes. However good the containment system that may be defined, the potential for disruption to the isolation of such materials (and the

residual long-lived activity content) from the accessible environment over long-periods still needs to be addressed. That is not to say that no wastes with longer-lived components are potentially suitable for near-surface disposal, since their potential safety implications depends not only their radioactive half-life but on also their activity concentration and the nature of the radiological hazard presented by the radionuclides involved. We therefore consider that simplistic use of the terms 'short-lived' and 'long-lived' should be avoided – it is not half-life alone that determines the acceptability of an option.

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| (v) | **Deep geological disposal**: CoRWM welcomes your views on whether there are other forms of deep geological disposal that we should consider. |

Clearly, there are a range of different ways in which a geological repository could be implemented, depending on the nature of the rock, as well as the wastes being disposed. However, the important thing to consider from a strategic perspective is whether there are more basic safety concepts to take into account. Disposal in deep boreholes has been considered by CoRWM on the basis that the degree of isolation and containment provided would be qualitatively different from that provided by opening a repository volume at shallower depths. It could perhaps be argued that disposal in salt (as at WIPP in New Mexico) follows a different concept in terms of isolation of the wastes from groundwater from that in other rock formations found in the UK; however, the extent to which it could be considered a different 'form' of deep geological disposal is perhaps in the eye of the beholder.

The only other qualitatively distinct alternative that has been considered elsewhere is a deep repository in unsaturated rock formations above the regional water table (as at Yucca Mountain). However, there is no scope for locating such a facility in the UK.

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| (vi) | **Proposals in relation to radioactive materials**: CoRWM proposes to consider the implications of various approaches by addressing different 'inventory scenarios' in the options assessment process. We are interested in your views on this and on the alternatives described on page 23. |

We believe that it is appropriate for CoRWM to consider alternative 'inventory scenarios', specifically in terms of the impact of alternative regimes for the handling of plutonium and uranium on the arisings of other wastes.

# 2. Assessing the short-listed options

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| **2.1** | Do you have any concerns about the process CoRWM proposes for assessing the options? (Consultation document pages 24-26.) | Yes | **X** |
| | | No | |
| | If yes, what are your concerns? | Don't know | |

Quintessa is currently engaged as a sub-contractor in support of CoRWM's process for multi-criteria analysis, and we believe that the process of undertaking an MCA will be extremely helpful to CoRWM. The details for implementing this analysis remain to be fully worked out; however, we are concerned at the implication that this can be structured most effectively in the form of a 'flat' comparison of options against criteria. Whilst such a process can help to ensure that a wide range of considerations are brought to the surface and discussed, we are concerned at the potential for this to obscure some of the key decisions that need to be made. We would therefore suggest that, alongside the MCA,

CoRWM might consider structuring their analysis in the form of a decision process, at three main levels:

1. The fundamental choice between: (a) deciding to implement a final management strategy now; and (b) deciding to delay/defer the implementation of such a strategy, in the expectation that there will be significantly greater confidence in going forward with implementation at some time in the future. This is ultimately a question of weighing up of the potential advantages of flexibility (avoiding irreversible decisions until sufficient assurance is available, and to be able to respond to new knowledge) against the burden of responsibility passed on into the future. It needs to take into account a clear understanding of the uncertainties linked to safe and secure management of the hazards associated with either course of action, for each group of wastes.
2. The alternative safety concepts that would underpin a programme to implement either of the primary alternatives. For disposal, this includes deep geological disposal and (so-called) non-geological disposal. For storage, we believe that all options described so far follow a single safety concept, which is to provide for safety and security through active management of the wastes; however, it might possibly be argued that there is a strategic difference in approach between centralised and distributed storage.
3. The alternative possible realisations of any of these concepts (e.g. the six alternative storage options), according to the different objectives that those realisations might adopt through their implementation (for example, to improve on security, flexibility, etc.). This effectively allows a judgment to be made of the value of expenditure to improve performance against a given set of performance criteria.

As things currently stand, we believe that CoRWM has proposed as series of ‘options’ that mix up comparisons of strategies, concepts and realisations. To compare them all together, against a single set of criteria, as part of a single, all-embracing MCA will not be easy. The closer an option can be described in terms of how it might be implemented, the more appropriate it will be to use hard quantitative criteria to assess its performance, and to compare it with alternatives, including the cost-effectiveness of alternative implementation approaches. Conversely, the more strategic the comparison that is undertaken, the more appropriate it will be to structure the comparison between alternatives in terms of wider strategic considerations and their inherent ethical trade-offs.

We believe that it may prove to be effective to undertake an MCA at Level 3 (according to the list above), simply based on storage options (for all wastes) and to conduct a separate comparison for the disposal options (both for all wastes, and for sub-components of the total inventory). The most preferred options could then be carried forward as exemplars of the broad concepts between which choices need to be made (Levels 2 and 1), or as the potential ‘building blocks’ of a composite strategy. Splitting out the different levels of the decision process may also make it more feasible to consider a wider range of conceptual approaches (e.g. taking account of possible regional storage facilities, as an alternative to a single centralised facility or leaving all wastes at the current locations).

One key advantage of such an approach is that it would enable the definition of criteria to be matched to the nature of the comparison being undertaken at different levels. We believe that it can be helpful to separate those criteria (or their expression) that effectively relate to optimising the implementation of a given strategy from the deeper issues that underpin the determination of a broad overall strategy.

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| **2.2** | Is CoRWM proposing to involve specialists, stakeholder organisations and citizens to do the right tasks? | Yes | **X** |
| | | No | |
| | | Don't know | |

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| **2.3** | Are there any other ways in which CoRWM should involve people? | Yes | **X** |
| | | No | |
| | | Don't know | |

It seems to us that the main current participation comes from those who were either selected for citizens' panels at the outset, or who showed an early interest by registering when the Committee's work first began. We recognise the enormous efforts that members of CoRWM have put into the wider 'extensive' process (particularly through public meetings) and the recent improvements to the website. Still, however, it would seem that knowledge and publicity of the process has not yet gone extended deeply into the wider public, or outside the extended 'nuclear family'. Judging by national press coverage, for example, the major interest has been in the composition of the committee itself, rather than the work it is carrying out. Perhaps it is too much to hope that greater public awareness of the content of the work can be achieved before the Committee's conclusions are published – we are aware, however, that other organisations (such as NRPB) produce excellent (animated) guides and these could potentially be helpful to members of the public as well as to news and other media organisations.

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| **2.4** | Are any issues missing on pages 27-28 which should be included – either as separate criteria or within these proposed criteria?<br>If yes, what are they and are they important? | Yes | **X** |
| | | No | |
| | | Don't know | |

Consideration of 'Implementability' does not appear to make it clear that a key consideration can be the robustness of design/strategy (e.g. proven technology, passive safety & security, etc.), which will tend to favour those alternatives that do not rely on untried techniques or human intervention.

Also, given previous comments, we would wish to be assured that appropriate consideration was given to understanding uncertainties in projected impacts (for all options, including storage options) in order to inform decisions regarding the trade-off between flexibility and burden on future generations.

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| **2.5** | Should any of the criteria (or issues within the criteria) be removed?<br>If so, which one(s) and why? | Yes | |
| | | No | **X** |
| | | Don't know | |

See comments in 2.1 above – we do not favour the removal of criteria, but to ensure that the criteria are used intelligently and effectively, at an appropriate level in the options comparison.

| **2.6** | CoRWM welcomes your response to all or any of questions (a) to (f) on pages 28-29. What are your views on the issues raised? |
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| a) | What risk to health and safety might be 'acceptable'? |
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The options, such as they are described, are at best only exemplars of what might ultimately be implemented. Detailed considerations of siting and design optimisation will have a major impact on actual health and safety performance. The importance at the strategic decision-making level is the perceived capacity of an option to satisfy a particular criterion of acceptability.

There is an enormous literature on social and technical interpretations of risk, which would be inappropriate to enter into now. From a technical perspective, however, it would be reasonable to ensure that commensurate expenditure is allocated to the management of radioactive waste by ensuring that risk standards were comparable with those applied (or tolerated) for hazards of a similar nature (e.g. long-lived, potential environmental contaminants). An overall constraint of $10^{-5}$ per year, with a $10^{-6}$ per year lower limit on optimisation, could be considered appropriate.

| b) | Is it fair that one community (or a small number of communities) should bear the burden of radioactive waste management? |
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It could be argued that the main risks to health and the environment will arise either during construction and operation, or so long in the future that the concept of a current 'host' community bearing a very long-term burden is questionable. Of course, there are other important potential disadvantages (e.g. blight) that may be faced – a host community may have important near-term concerns about tourism, economic boom and bust, planning and development difficulties, etc. Ultimately, however, these are qualitatively similar to those faced in other situations where local solutions are sought for national problems (e.g. transport infrastructure, toxic waste handling facilities, etc.). It is important to learn from experience of good practice elsewhere regarding how communities can become involved in, and potentially influence, the development of projects of this nature in order to mitigate the burden that they face.

| c) | How important is the principle that wastes should be managed over the long-term close to where they are currently located? |
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This is primarily important with regard to the need for waste transport. There needs to be a balance between the impacts (and possible risks) associated with transport and the possible benefits of providing a superior location. It is generally accepted in environmental planning that there is a balance to be made between the cost-effective use of specialised central and/or region facilities and the overall desirability of managing wastes as close to source as is reasonably achievable.

| d) | Is it fair that future generations should bear a large part of the burden of radioactive waste management? |
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No. Not unless we can convince ourselves that they will be grateful for the flexibility we have provided to them and that it outweighs the responsibility we would pass on to them.

| e) | How important is it that wastes are retrievable? |
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All wastes are retrievable – it is simply more or less difficult (and expensive) to achieve, depending on which management strategy is adopted. Some measure of built-in retrievability (or, perhaps better, reversibility) is nevertheless a reasonable expectation of

any implementation strategy. There are various ways of implementing retrievability principles and these should be considered as part of the process of design optimisation.

Built-in retrievability would appear to make sense for periods up to a few decades, to provide the opportunity to assess initial defects in the disposal system and assurance that the system is behaving as anticipated in safety assessments. To continue for much longer would impose an undue burden on future generations.

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| f) | What part should financial cost play? |

Any selected option (or portfolio of options) will also need to be developed through a process of design optimisation, in which costs will play an important role.

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| **2.6** | What other questions need to be asked when assessing the short-listed options? Why are they important? |

Different questions are relevant to different timeframes. Until the wastes can be placed at a location that is physically separate from Man's environment, the major concern will be security. Beyond that time, longer-term impacts take on greater importance.

# 3. Combining options

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| **3.1** | What are your general views on potential combinations of options and their use in CoRWM's assessment? |

The aim should be to define and clearly justify the basis on which CoRWM decides to recommend whether or not a long-term solution should be screened-out or deferred. CoRWM needs to be satisfied that its MCA process (or other procedure for options evaluation) is capable of differentiating the pros and cons of alternative 'building blocks' (such as interim storage for different periods of time (p.30)) that may be used in assembling option combinations.

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| **3.2** | What specific suggestions do you have for combinations of options that CoRWM should consider? |

Interim above-ground storage should be limited to as short a time as possible. Dispersed facilities are more suitable for high-volume, low activity wastes, thereby minimising potential transport impacts, with centralised or regional facilities for other wastes.

We note that dispersed facilities are more than likely to involve existing sites – siting considerations (such as vulnerability to coastal erosion and sea level rise) could play a greater role in deciding on strategy than would otherwise be the case.

# 4. Thinking ahead: *implementation*

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| **4.1** | What are the issues about implementation that concern you? |

The investigation of a site should not be subject to artificial time constraints, but should rather reflect the aim of meeting agreed objectives (e.g. in terms of information needs to support decision making) before moving on to the next stage.

Consideration should be given to providing support for counter-expertise programmes in potential host communities for any kind of facility.

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| **4.2** | What advice on implementation should CoRWM give to the UK Government? |

The selection and investigation of a site should be carried out by an implementing organisation with clear responsibilities, accountabilities and funding arrangements, but overseen by an independent Commission.

# 5. Comments on this consultation

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| **5** | Do you have any comments on the consultation document, or the consultation process? (For example, how well is CoRWM is meeting its terms of reference on public engagement in Annex C?) |

No.

# 6. Other comments

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| **6** | Do you have any other comments about CoRWM's work or about the issues raised by this consultation document? |

No.

## *Thank you for your time and comments.*

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|---|---|---|
| In what capacity have you responded? | Individual citizen | |
| | Employee or member of an organisation (please include below) | X |


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| May we keep your details on our database so we can send you further information about opportunities to comment and participate? | Yes | X |
| | No | |

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| *Confidentiality*: It is part of a policy of openness and transparency that written responses to a consultation can be made available to anyone who asks, unless respondents have requested confidentiality. | Yes | |
| Do you wish your responses to be anonymous? | No | X |

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