

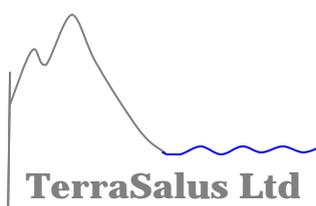
**Independent Peer Review of:
LLWR's Development of the
2011 Environmental Safety Case**

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Executive Summary

The Low-Level Waste Repository (LLWR) has been the principal facility in the UK for the disposal of Low-Level Radioactive Waste (LLW) since 1959. The site is owned by the Nuclear Decommissioning Authority (NDA) and is operated on behalf of the NDA by a Site Licence Company (SLC).

Disposals at the LLWR are authorised by the Environment Agency (EA) under the Radioactive Substances Act 1993. Schedule 9 Requirement 6 of the LLWR Authorisation requires that *'Five years from [the] effective date of this Authorisation and at such intervals thereafter as the Agency specifies in writing, the operator [shall] update the Environmental Safety Case(s) for the site covering the period up to withdrawal of control and thereafter'*. The next update of the Environmental Safety Case (ESC) is due on 1 May 2011.

In accordance with best practice in safety case development and relevant regulatory guidance, the SLC is subjecting its ESC development work to independent peer review.

In February 2009, the independent Peer Review Group (PRG) that has been convened by the SLC was asked to review two documents that described proposed approaches to the 2011 ESC and the assessment of potential doses associated with water abstraction wells. The PRG's comments on these documents were recorded and provided to the SLC in March 2009.

In July 2009, a meeting was held between the SLC and the PRG to discuss various safety case issues and peer review comments. The SLC provided responses to key peer review comments. This note records the PRG's comments on the SLC's responses.

LLWR is clearly progressing with its ESC development and is taking due account of the process of on-going peer review. The PRG's expectation is that the programme of work and review outlined to the PRG by LLWR will resolve the issues raised.

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Independent Peer Review of: LLWR's Development of the 2011 Environmental Safety Case

1 Introduction

1. The Low-Level Waste Repository (LLWR) has been the principal facility in the UK for the disposal of Low-Level Radioactive Waste (LLW) since 1959. The site is owned by the Nuclear Decommissioning Authority (NDA) and is operated on behalf of the NDA by a Site Licence Company (SLC).
2. Disposals at the LLWR are authorised by the Environment Agency (EA) under the Radioactive Substances Act 1993. The LLWR receives wastes from a range of consignors including nuclear power stations, fuel cycle facilities, defence establishments, general industry, isotope manufacturing sites, hospitals, universities and from the clean-up of historically contaminated sites.
3. In 2002, the previous operator of the site, British Nuclear Fuels plc (BNFL), provided the EA with environmental safety cases for the facility (BNFL, 2002a, b). These safety cases were reviewed by the EA (Environment Agency 2005) and, following a period of consultation, a new authorisation was granted (Environment Agency, 2006). The authorisation includes several schedules, of which Schedule 9 is a list of improvements and additional information that the operator must supply.
4. Schedule 9 Requirement 6 of the LLWR Authorisation requires that *'Five years from [the] effective date of this Authorisation and at such intervals thereafter as the Agency specifies in writing, the operator [shall] update the Environmental Safety Case(s) for the site covering the period up to withdrawal of control and thereafter'*. The next update of the Environmental Safety Case (ESC) is due on 1 May 2011.
5. The SLC has initiated a programme of work – the ESC Project – to address the requirements of Schedule 9. In accordance with best practice in safety case development and relevant regulatory guidance (EA *et al* 2009), the SLC is subjecting its ESC development work to independent peer review.
6. In February 2009, the independent peer review group (PRG¹) that has been convened by the SLC was asked to review two documents that described proposed approaches to the 2011 ESC and the assessment of potential doses associated with water abstraction wells:

¹ Peer review group (PRG) is now preferred over the previously used peer review panel (PRP).

- LLWR (2008) LLWR Environmental Safety Case: Technical Approach to the 2011 Environmental Safety Case, LLWR/ESC/R(08)10010, Issue 1, 28 November 2008.
 - Serco (2009) Methodology for the Assessment of Wells – Report to LLW Repository Ltd., SERCO/TAS/002888/001 Issue 1, January 2009.
7. The PRG's comments on these documents were recorded and provided to the SLC in March 2009 (Bennett *et al* 2009).
 8. In July 2009, a meeting was held between the SLC and the PRG to discuss various safety case issues and peer review comments. The SLC provided responses to key peer review comments in the form of a table (LLWR 2009 – also reproduced below).
 9. Table 1 records the PRG's assessments of the SLC's responses. The comments on the responses are presented according to the paragraph numbers in Bennett *et al* (2009).

2 PRG Assessments of LLWR Responses

Table 1 Assessment of Responses to Peer Review Comments.

Para No	LLWR's Summary of Key Peer Review Comments	LLWR's Responses to Key Peer Review Comments		Peer Review Group Assessment of Response
		Response	Action	
17, 18	The LLWR should develop the ESC against the issued rather than the draft guidance.	Of course, this is correct. We note that the issued guidance is very similar in most key respects to the draft. We plan to update the safety case approach document before the final assessments and development of the ESC, if this is thought worthwhile at that stage.		The response is appropriate.
25	The LLWR should consider a fourth main element in presenting the ESC, entitled 'Management Systems, Safety Culture and Engagement with Stakeholders'.	As indicated in the Safety Case Approach document, we agree that these are important topics for the ESC. We will consider the suggestion at a forthcoming workshop to address ESC documentation structure.	Considered at ESC Documentation Workshop and incorporated into current plan.	The response and proposed action are appropriate.
25	The Panel noted that it was not clear how many options for site management would be addressed in the ESC.	At some level a range of options with respect to design, management and expected disposal inventory will need to be considered in order to make the arguments. These will not all be assessed at the same level of detail. The number of options to be assessed is not yet clear.		The response is appropriate, but an action should be identified to resolve the uncertainty over which options for site management will be addressed in the ESC.
28	Enough time needs to be set aside for peer review. Work components should be planned so they may be subjected to peer review as a routine part of the work process.	It is agreed that this is desirable, but an approach involving extensive review and revision of reports before their delivery will be inconsistent with the demanding timescales to which the project is working. We see the task as designing an optimal peer review programme taking account of the external time constraints.	Discuss programme with Peer Review Panel	The response and proposed action are appropriate. Details of the peer review programme are under discussion and it is fully expected that a suitable programme of peer review will be taken forward

Para No	LLWR's Summary of Key Peer Review Comments	LLWR's Responses to Key Peer Review Comments		Peer Review Group Assessment of Response
		Response	Action	
29	The peer review panel should be identified as a stakeholder	The Peer Review Panel (PRP) is a stakeholder in the sense that it is representative of the wider scientific and technical community. However, it is not a stakeholder in the sense that it has any stake in whether the LLWR succeeds or fails or how it proceeds, nor any jurisdiction or constituency, as the EA, NDA, CCC, local community and environmental interest groups do. We consider that the role of the PRP is to improve the ESC through technical challenge. It is not necessary for the PRP to be satisfied as an independent stakeholder (see for example paragraph 128).	Issue for discussion with PRP.	The PRG is a stakeholder in the ESC Project, but is not necessarily <i>representative</i> of the wider scientific and technical community. Although the PRG agrees that there is no <i>legal</i> requirement for its comments to be addressed or ultimately resolved, the PRG is an interested party with respect to the quality and content of the ESC. The NS-GRA (EA <i>et al</i> 2009) expects the developer to engage interested parties in discussion of its developing ESC. Confidence in the ESC would be reduced if important peer review comments were not addressed. Therefore, it is important that the ESC should contain the reasons why any potentially significant peer review comments made by the PRG have not been addressed.
31, 32	The LLWR should have a programme of auditing to determine compliance with requirements. Information management and quality systems should be in place	We agree with this point. The Project is subject to internal and external audit against LLWR Procedures	LLWR need to consider any actions required to bolster our approach.	The response and proposed action are appropriate.
33	In presenting the case, attention needs to be given to resources, competencies, succession planning and knowledge management.	We agree with this point.	Ensure appropriate emphasis in ESC.	The response and proposed action are appropriate.
34	It is not clear whether the ESC will address uncertainties in the inventory	We will be addressing uncertainties in the inventory. We would make a distinction between uncertainties in the quantities of radionuclides in different waste streams and the uncertainties in the way that LLW will be managed, which will affect which parts of that inventory are disposed to the LLWR.		The response is appropriate.

Para No	LLWR's Summary of Key Peer Review Comments	LLWR's Responses to Key Peer Review Comments		Peer Review Group Assessment of Response
		Response	Action	
35	It is not clear what models will be used to represent the near field nor whether microbial action is represented.	A response would need to be lengthy.	Discuss whether this area is one for future Peer Review Panel scrutiny,	The response and proposed action are appropriate, in that the treatment/representation of near-field is an area that has been identified for future peer review.
36	It would be valuable to note how key radionuclides are identified and whether a screening process is in place.	A view of the key radionuclides could and should be justified, but there is no formal screening process.	The LLWR needs to consider how to develop the relevant arguments.	The response and proposed action are appropriate. It is recommended that safety case arguments relating to the identification of key radionuclides should be peer reviewed at an appropriate stage.
37	Models of partially saturated systems may be difficult to develop and justify in the time available.	We agree with this comment. We do not intend to develop systems assessment models with a complex representation of the unsaturated zone, but rather would look for some appropriate simplification. We have not yet decided on our approach.		The response is appropriate, but there is an implicit action for LLWR to develop and implement its approach. It is recommended that the PRG review relevant aspects of the approach to representing near-field flows at appropriate points in the ESC development programme.
38	Enough time needs to be allowed for any data elicitation in relation to engineered performance.	We recognise the need to address the issues raised in previous PRP comments. Overall, we are aiming for a streamlined data elicitation process because there will be a significant number of parameters that we need to consider.		The response is appropriate. The PRG has been asked to attend and observe an Engineering Performance Elicitation Workshop, designed to help define and quantify the various parameters. The treatment/representation of near-field is an area that has been identified for future peer review.
42	The LLWR should consider the conceptualisation and definition of hydrofacies	We recognise the need to clearly identify how the hydrofacies utilised in the hydrogeologically modelling of the site have been developed and address the link to our understanding of the geology.		The response is appropriate.
43	The internal heterogeneity of the lithofacies units will need to be addressed in any prediction of contaminant transport.	Heterogeneity of the lithofacies units will be considered in determining how they are represented in the hydrogeological modelling. We will be developing some models with explicit representation of the heterogeneity.		The response is appropriate.

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44	Faster rates of sea level rise may occur than identified in the 2007 IPCC reports.	We acknowledge the need to consider the range of uncertainty.	Requires consideration in the review and update of climate and coastal erosion scenarios.	The response and proposed action are appropriate.
44	Additional data may be required on human habits associated with a lagoon.	We have recently undertaken a preliminary assessment of a future lagoon and found it possible to adapt previously defined PEGs to the specific conditions of the lagoon.		The response is appropriate. The PRG would be grateful for the opportunity to review LLWR's recent preliminary assessment of the lagoon.
45	The National LLW Strategy should not define the wastes coming to the LLWR without reference to the ESC.	We agree and this has never been the intent. The National strategy would consider the issues, taking account of information available from the LLWR ESC. If it is determined that a particular category of waste should be disposed in the LLWR (in terms of this being the best overall solution), this of course will always be subject such a decision being consistent with the ESC. Such consistency would be determined. Where any waste stream is challenging, consideration will be given to the merits or detriments associated with accepting the stream and an appropriate decision made on the basis of ESC arguments.		The response is appropriate.
47	Innovations need to be considered through safety assessment.	We agree and have a programme of work in place.		The response is appropriate.

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53, 62	It is not clear that cautious models will be developed for the near field. The use of overly cautious models can sometimes lead to sub-optimal decision making.	We agree that the use of overly cautious models can lead to sub-optimal decision making. However, there is a real question about our ability to parameterise and robustly support less cautious models whether they be for the operational or later periods. Given this and other difficulties, we foresee an approach with a range of models, each of which will be associated with advantages and disadvantages.		The response is appropriate. The treatment/representation of near-field is an area that has been identified for future peer review.
55	The LLWR should consider direct radiation exposure during the operational phase.	There are a range of similar impacts that we will consider in assessing impacts during the operational phase including the one identified.		The response is appropriate.
53, 73	The panel would like the results of near field models to be compared against near-field data rather than to be calibrated using such data.	We concur that results should be compared with monitoring data. On the other hand, we believe that there are circumstances in which calibration against monitoring data is useful, even though it may result in a model that has lost some predictive capabilities. It may be worth noting that the conventional approach in landfill assessment is to use the measured concentrations of contaminants in leachate as a basis for assessment calculations.		The PRG remains unconvinced that the use of measured groundwater concentrations to calibrate assessment models is an appropriate approach or represents sound science. However, the appropriateness of the LLWR's modelling programme cannot be assessed at this stage because further information is necessary, for example, on the balance between process modelling and model calibration.
56	Pathway analysis should be removed from the proposed approach.	We agree that the right processes and interactions need to be modelled and this should always be the objective. However, it is convenient in undertaking calculations to use different numerical models and computer programmes for different pathways and for this reason we find the presentation helpful. We do not propose an approach in which all pathways are represented within a single systems assessment model.	In the first instance, we would like to clarify the PRP's comment.	The PRG considers that LLWR's approach of making sure that the 'right' processes and interactions are modelled is appropriate. The PRG understands the convenience of using different models to represent different release pathways, but notes that care will be needed to ensure that interactions (couplings) between pathways are not missed. Care will also be needed when describing in the ESC documents the use of, and results from, assessment models of different pathways.

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58	The FEP approach needs to be appropriate.	We feel that a simplified approach is appropriate in our case. Our review would be linked to the identification and tracking of uncertainties, with the objective of confirming that FEPs have received appropriate treatment in models or elsewhere.		The summary of the comment in LLWR (2009) does not fully capture the PRG's comments. It is best practice in safety assessment to use FEP lists and FEP screening to check that the assessment models do include the relevant processes, and to justify the means of their inclusion in the models. The effectiveness of LLWR's treatment of FEPs will need to be judged at a later stage.
59	The LLWR approach to a formal Issue resolution process is not clear.	We have agreed an approach with the Environment Agency. This includes consideration of issues raised as part of the old resolution process. It includes maintaining a list of key comments from more recent reviews. However, we do not propose to maintain a detailed formal issue resolution process as it is not the most efficient use of resource on the regulator or operator side.		The response is appropriate, but does not explain the approach to issue resolution being followed with the EA. The PRG encourages LLWR to document this so that it is clear that an agreed approach has been followed during development of the 2011 ESC.
62	The LLWR should consider undertaking a bias audit.	We are commissioning work to set up a FEP and uncertainty tracking system, which will track uncertainties and biases. We do not propose a quantitative assessment of bias.		The response is appropriate.
63	The panel has some reservations about the use of deterministic calculations.	We see such calculations as having a major role in our case. This may be a topic for further discussion.		The summary of the comment in LLWR (2009) does not fully capture the PRG's comments. Subsequent discussions with LLWR have improved understanding of the relevant issues and emphasised that this is a complicated aspect of the ESC. The PRG would welcome further discussions over the range of calculations proposed.
64	A comprehensive approach to the management and treatment of uncertainties is required.	We agree that an appropriate and comprehensive approach is required. This may be a topic for further discussion.		The response is appropriate. The management and treatment of uncertainty is an area that has been identified for future peer review.

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79	It may be useful to consider current transient behaviour from long-term monitoring and any annual cycles.	We agree that this should be considered. As part of the calibration process the response of the hydrogeological model to transient conditions will be assessed.		The response is appropriate.
81	Wells need to be treated during the operational period.	We agree and will be providing a treatment.		The response is appropriate.
82	Chemotoxic impacts arising from a well need to be considered.	We agree, but note that the Environment Agency would prefer consideration of groundwater as a receptor during the operational period with an approach more similar to that pursued for landfills.		The response is appropriate.
84	Serco(2009) confuses human intrusion with the drilling of a well into the contaminant plume.	We do not agree (see Figure 6.3 of the NS-GRA).		The summary of the comment in LLWR (2009) does not capture the PRG's comments accurately. We consider that <i>in some places</i> the report (Serco 2009) confuses human intrusion with drilling of a well into a contaminant plume away from the disposal facility. For example, the last sentence of Section 2.1.4 of Serco (2009) is not accurate. However, the comment is minor, especially given that there is a common understanding amongst the PRG and LLWR over what constitutes human intrusion and what does not (e.g., drilling of a water abstraction well outside the facility).
85-91	The proposed definition of a Potentially Exposed Group for the water abstraction well is overly complex and unjustified.	We can see pros and cons of the approach recommended in Serco (2009) and the alternative approach recommended by the peer review committee. We will consider the comments further – perhaps further discussions would be informative.	Give further consideration to issue raised.	The response is appropriate. The definition of PEGs is an area that has been identified for future peer review.
93	Calculations of a bounding estimate for the well are essential.	If we understand the comment correctly, we would disagree. We would propose to estimate what we think will happen together with the associated uncertainty.		The response is appropriate. The potential disagreement that exists over this comment and the need (or otherwise) for a bounding estimate, should be resolved if the ESC properly quantifies the uncertainty in impacts from the well pathway.

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98	Consideration should be given to re-eliciting the well probability information.	We do not feel this is necessary.		The response is appropriate.
102	Heterogeneity and drawdown need to be represented in models used to assess a well.	We accept that the effects of heterogeneity and drawdown need to be considered. However, we are not clear at present that explicit representation is required.		The response is appropriate; LLWR will have to justify the approach taken to addressing the effects of heterogeneity and drawdown in the ESC.
107	The panel consider that the proposed approach for the lagoon is broadly reasonable.	A report is now available.		The response is appropriate. The PRG would be grateful for the opportunity to review LLWR's recent preliminary assessment of the lagoon.
109, 111	The panel is concerned that there is an intent to keep the assessment of radon doses separate from other parts of the assessment.	The LLWR was of the view that comparison of radon doses with the radon action level was appropriate, in accord with HPA advice. However, as noted in paragraph 111, the NS-GRA does not recommend such comparison and requires exposures to be presented both aggregated with other exposures and separately. Therefore, we do not propose to pursue such comparisons as a basis for reaching a view on compliance, but nevertheless we still consider that a comparison with the radon action level is informative. Whatever approaches are followed, we are committed to considering the potential additivity of doses received by different exposure pathways when they might be received by the same individual.		LLWR will need to ensure that the 2011 ESC presents the assessment results in a way that satisfies the guidance (e.g., with and without the contribution from waste-derived radon). LLWR's commitment to consider the potential additivity of doses is, therefore, appropriate. We note, however, that the response does not address the comments in paragraph 112 of the PRG's report. This is not a major issue, but we continue to recommend discussion with the EA concerning the treatment of radon doses for scenarios not involving human intrusion.
114	The panel is not convinced that a cap could in practice prevent all radon release.	We consider that an appropriately designed cap could prevent releases by diffusive processes. If there is significant gas flow, radon could be transported as a trace component of the gas. It would be harder to design a cap to prevent such transport – we propose to assess the impacts of such transport through a damaged cap.		The response is appropriate and the PRG welcomes the intent to assess radon releases through a damaged cap.

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115 to 118	A more detailed treatment of radiation doses arising from coastal erosion is required than was pursued in the Requirement 2 submission.	We agree that there is a need for a better understanding and representation of the processes by which wastes will be eroded, broken down and dispersed and by which PEGs may be exposed. The process of erosion is of interest and a programme of work is being commissioned to develop our understanding.		The response is appropriate. The assessment of the impacts of coastal erosion is an area that has been identified for future peer review.
119 to 123	Human intrusion	The LLWR has recently presented a proposal to the EA on the general approach to human intrusion. As part of this proposal, we have made a preliminary identification of the cases that we propose to present and assess. In summary, we consider human intrusion cases may be developed for three purposes – demonstration of compliance, input to optimisation and illustration. We await an EA response on this.	A potential topic for discussion with the PRP.	The response and proposed action are appropriate. The PRG would welcome further discussions on the topic of human intrusion.
125 to 126	The Non Human Species Assessment should be proportionate to the low impacts.	The LLWR agrees.		The summary of the original comment may not have fully captured the PRG's concerns. The response to the summarised comment is appropriate, but the PRG did also comment that there should be a focus on those aspects of the scenario that are unusual - particularly, exposure to biota from wastes that are in the process of erosion. It is not clear that LLWR has acknowledged this point.

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127	The PRP imply that waste should only be accepted consistent with meeting the risk guidance level and the relevant dose criterion.	Although we are proposing to calculate reference capacities that correspond to meeting these criteria, we disagree that the disposal of waste leading to higher radiological impacts is necessarily excluded. The risk guidance level and other criteria are not limits.		The summary of the comment in LLWR (2009) does not capture the PRG's comments accurately. The PRG's understanding of LLWR (2008) was that LLWR was proposing that waste should only be accepted consistent with meeting the risk guidance level and the relevant dose criterion. Section 5.13 of LLWR (2008) includes, ' <i>...our approach would be to estimate reference capacities that would correspond to meeting the risk guidance level or in the case of human intrusion, the relevant dose criterion</i> '. LLWR needs to document the proposed relationship between calculated radiological capacity and waste acceptance more clearly. The PRG has not suggested that the disposal of waste leading to radiological impacts higher than the risk guidance level is necessarily excluded .
128	The PRP proposes dialogue with stakeholders, including themselves, to establish what are reasonable and credible scenarios on which to base radiological capacity calculations	We believe it is the role of the regulator to make the final decision on what these scenarios should be		The PRG agrees with LLWR's summary of its comments. Dialogue with the relevant stakeholders would be valuable. It is not clear that the regulators will make a final decision on the scenarios to be considered in the assessment. The EA has often emphasised that the development of the safety case is the responsibility of the operator.
131	More information is required on the LLWR's approach to additivity when generating waste acceptance criteria.	Our approach is not yet fully defined – this may be a topic for future consideration.		The response is appropriate. The PRG would welcome further discussions on the topic of waste acceptance criteria, which may help in resolving the issue raised in respect of Para 127.

3 Conclusions

10. In conclusion, there is considerable agreement between the PRG and LLWR over the various peer review comments raised in Bennett *et al* (2009). Quite properly, further discussions and peer review will need to continue for some topics, for example because LLWR's responses will be supplemented with more detailed information in due course. We expect that such discussions and reviews will be conducted as part of the normal on-going process of peer review. Details of the peer review programme are under discussion and it is fully expected that a suitable programme of peer review will be taken forward.
11. Most of the summaries of the peer review comments in the table provided by LLWR (LLWR 2009) are appropriate, but in a few cases the entries in the table did not quite capture the PRG comments properly; it might be better in future to quote the PRG's text rather than summarising the PRG's comments. There were potential mismatches / misunderstandings / disagreements for a few comments. The text provided in Table 1 should help to clarify these points.
12. It would be helpful for the PRG to see the recent advice provided to the LLWR by the EA relevant to the ESC (e.g., on human intrusion, on coastal erosion, and on the assessment of non-radiological risks). The PRG would also be grateful for the opportunity to review LLWR's recent preliminary assessment of the lagoon.
13. LLWR is clearly progressing with its ESC development and is taking due account of the process of on-going peer review. The PRG's expectation is that the programme of work and review outlined to the PRG by LLWR will resolve the issues raised.

4 References

1. BNFL, 2002a. Drigg Operational Environmental Safety Case. British Nuclear Fuels plc.
2. BNFL, 2002b. Drigg Post-Closure Safety Case: Overview Report. British Nuclear Fuels plc.
3. Bennett, D.G., Hooper, A., Jones, S. and Lanyon, W., 2009. Independent Peer Review of: LLWR's Approach to the 2011 Environmental Safety Case and Methodology for the Assessment of Wells.
4. Environment Agency, 2005. The Environment Agency's Assessment of BNFL's 2002 Environmental Safety Cases for the Low-Level Radioactive Waste Repository at Drigg. Report No. NWAT/Drigg/05/001, Version 1.0.
5. Environment Agency, 2006. Certificate of Authorisation and Introductory Note, Disposal of Radioactive Waste from Nuclear Site British Nuclear Group Sellafield Ltd., Low Level Waste Repository, Drigg, Cumbria, Authorisation Number BZ2508.
6. Environment Agency, Scottish Environment Protection Agency, Northern Ireland Environment Agency, 2009. Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirement for Authorisation. February 2009.
7. LLWR, 2009. P08014_080025_9524 Draft Table of Technical Responses, July 2009.