

<b>Consultation of the comparison of land management options– Log of comments</b>					
Name	Organisation	COMMENTS			
		Sub-section	Sub-section paragraph	Page	Comment
<b>PRELIMINARIES (preface acknowledgements executive summary abbreviations)</b>					
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Title			Should this read 'Guide to the comparison of contaminated land management options'?
<b>SECTION 1 – INTRODUCTION</b>					
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	1.3.1	2 <sup>nd</sup> bullet	2	The HSE/NII SAPs 2006 are not 'regulatory requirements' but guidance to Inspectors as to what to look for in nuclear safety cases.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	1.3.1	Bullet points	2	Should include reference to 'options appraisal' in CLR-11 (Defra/EA, 2004).
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	1.3.1	Final para	2	It is an over-statement to say that "In several instances, the comparison of options <b>is required</b> to conform to the principles of the BPEO method." Regulatory guidance (e.g. EA, 2002) does not represent a requirement.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	1.3.2	2nd para	2	What is the basis of the statement: "NDA is required to approve the contaminated land management strategy....". Required by whom, and if so, where is this requirement relating to contaminated land strategy explicitly stated? (Or is it an extrapolation from a general requirement of the Energy Act for NDA to approve SLCs' strategies and plans) I think LMGv2 may have a clearer text on this.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	1.4.2	Final para	4	Suggest re-wording to "it is assumed that the site has been characterised sufficient to allow options to be assessed...", rather than potentially implying that all characterisation would be complete.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Figure 1		5	See my comments on this Fig in the context of LMGv2.
<b>SECTION 2 – GENERAL APPROACH TO OPTIONS COMPARISON</b>					
Paul Dorfman (I)	University of Warwick				In GENERAL APPROACH TO OPTIONS COMPARISON, Interpretation of the Guiding Principles section tends to make some rather misleading statements about the nature of stakeholder engagement for rad-contam land.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	2.1	1 <sup>st</sup> para	7	Better to say "A set of guiding principles is put forward here...", since these guiding principles have not been derived in a fully consultative manner.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	2.1	All	7-8	It may help to use a different numbering (e.g. a-e, i-v) for the 'GPs' to avoid potential confusion with the 'KPs'.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	2.2	1 <sup>st</sup> para incl bullets	8	I think this (and/or Section 2.3.1) is the place to introduce and define (with reference to Glossary) all the relevant 'starting out' concepts including context, objectives, scope, assumptions and constraints. Note also overlap with 3.1.1.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	2.2	Fig 2	9	Ensure all the relevant 'starting out' concepts including context, scope, objectives, assumptions and constraints are included in this Figure.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	2.3.2	Final para	12	What does 'practicable' mean in the context of screening? Surely technical ineffectiveness should be a screening criterion? Should gross disproportionality be used as a screening criterion (it may be seen as a proxy for financial cost, which is generally disapproved of as a screening criterion)?

					Ensure that the equivalent text on p17 is also addressed.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	2.3.3	All	12	The first category of criteria/attributes should be 'health & safety'. I question whether social and economic attributes should 'always' be included. It may be appropriate to undertake a 'technical' options comparison then take social and economic factors into account when making the decision. Alternatively, social and economic factors may have been dealt with at a strategic level and the options comparison in hand is at a technical level where it could be pointless to consider the 'fine detail' of socio-economic aspects of different options. While it may be a good idea to 'consider' a very wide range of attributes, there is a case for only using those which can reasonably be expected to discriminate between options. This theme is developed later in the report, but should be mentioned here.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	2.3.5	1 <sup>st</sup> sentence	13	I do not think that this sentence is a good clear statement of the purpose of options comparison.
<b>SECTION 3 – KEY FEATURES OF OPTIONS COMPARISON METHODS</b>					
Paul Dorfman (I)	University of Warwick				Tiered approach and assessment of options comparison methods needs greater discussion within the group before progressing to this level.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3	All		See general comment about headings structure.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3	Footnote to 2 <sup>nd</sup> para	14	Please be more specific about where is 'elsewhere in this document'.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.1		14	This section needs some attention, sharpening it up and tying in with similar material in Sections 2.2/2.3.1 on 'starting out' concepts including context, objectives, scope, assumptions and constraints. Some cross-reference to CLR11 language ('define the context and set objectives') would be helpful.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.1	2 <sup>nd</sup> para, 1 <sup>st</sup> sentence	14	In what sense will the 'fundamental objectives' be 'defined by the LMG'? Is this an oblique way of saying that the 'fundamental objectives' flow from the Key Principles? If so, I disagree, because there may be corporate objectives such as re-use or sale of land which do not flow from the Key Principles. There is also a question as to whether the 'objectives' in this context are the (fundamental?) objectives of the overall contaminated land management process (LMG), or the specific objectives of the options comparison exercise in hand (i.e. the 'problem statement'). This should be clarified.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.1	2 <sup>nd</sup> para, 2 <sup>nd</sup> sentence	14	This begins to introduce the concept of 'tiered' options comparisons, mentioned further in Section 3.1.2 and illustrated in Figure 4. This is a fairly fundamental proposition of the guidance but is not adequately set out. As it is likely that non-regulatory stakeholders will want to be particularly involved at the strategic level, it is worth highlighting this at the outset, as this then influences the whole question as to what type of options comparison method to use. See General comments below.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.1	4 <sup>th</sup> para	15	What is meant here by 'breadth'? Is this the breadth of options that can be considered?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.1	4 <sup>th</sup> para	15	Please explain more clearly what is meant by 'constraints'. Give examples of 'practical considerations'. See General comments below, giving my understanding in the context of different 'tiers' of options comparisons.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.1	5 <sup>th</sup> para	15	What is the difference between 'constraints' and 'assumptions'? My reading is that 'constraints' are things that are imposed from outside the contaminated land problem which are not actually part of the 'objectives', whereas 'assumptions' are things we have to assume about the contaminated land problem which are subject to uncertainty. 'Quality of information' is surely a judgement rather than an 'assumption' (or is this an indirect way of talking

					about uncertainty in characterisation, which leads to the need to document an assumption)?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.1	8 <sup>th</sup> para (2 <sup>nd</sup> para under 'Level of Detail')	15	I found this paragraph rather discursive and not very informative.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.2	Bullet points	16	Monitored Natural Attenuation (as defined by regulators) is a method for dealing with groundwater contamination not soils and the same is broadly true of in situ enhanced bioremediation. Excavation is a means of making contaminated soil 'ex situ'. I think the option in mind here is 'direct disposal'. Soil vapour extraction is usually applied in situ. Bioremediation using windrows or biopiles is the most commonly used ex situ remediation method for (non-radioactively contaminated) soils and should be listed (see Appendix A2.7). These technical issues reflect the content and organisation of Appendix A, which needs a review to ensure it is appropriate, accurate and consistent. See general comments on Appendix A.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.2	3 <sup>rd</sup> complete para on p17	17	The screening step is very much 'buried' in the current structure of Section 3. It is potentially a key step that deserves at least its own sub-heading.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.2	3 <sup>rd</sup> complete para on p17	17	See previous comments on section 2.3.2 about what should be the basis of screening criteria.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.2	Bullet points	17	A further bullet point could be added: "Overall land management objectives (including future land uses) are not constrained or pre-defined". This is because, in many cases, there are pre-defined objectives/plans for land use, which limit the options and thereby simplify the options comparison process.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.3	General	18-19	Something should be said about the need to ensure that attributes are at least considered which could reflect the interests of stakeholders who are not represented, perhaps because they cannot yet be identified. For example, what about the interests of people living near or along the transport route to a (perhaps) as yet unidentified waste disposal site which would receive 'controversial' waste under some options but not all. The responsibility to identify such interests should lie with those undertaking the options comparison process.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.3	2 <sup>nd</sup> para	18	In 1 <sup>st</sup> sentence, should 'option' read 'problem'?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.3	3 <sup>rd</sup> para	19	See comment on 2.3.3 about whether every group of attributes 'must' 'always' be addressed.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.3	4 <sup>th</sup> para (under 'Level of Detail')	19	Any options comparison that considers Health & Safety or Environment as single attributes will always be flawed. There are almost always H&S and environmental 'costs' (e.g. waste/materials transport, worker H&S risks) to achieve H&S and environmental 'benefits' (e.g. reduced public dose, restoration of land).
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.4	Italicised headings	20	I think these headings should read: Relative scoring Absolute scoring Equal value scoring
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.4	2 <sup>nd</sup> para	20	What is meant by 'rating ... against a predefined absolute scale' and where is this previously discussed?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.4	5 <sup>th</sup> para	20	Reference to 3.1.3 is unclear – again about defined scales. Something missing here?
Hugh	Magnox Electric Ltd	3.1.4	5 <sup>th</sup> para	20	'fair' should read 'fare'

Richards (O)	(North Sites)				
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.4	6 <sup>th</sup> para	20	Am I right in saying that if equal value scoring is expressed in monetary terms, we are dealing with cost/benefit analysis? Some discussion of where CBA fits into all this is needed, regardless.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.4	6 <sup>th</sup> para	20	Should the NDA Safety & Environmental Detriment metric be discussed here?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.4	1 <sup>st</sup> full para on p21	21	'volume' presumably means 'waste volume'?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.1.4	2 <sup>nd</sup> full para on p21	21	I think the minimum process of scoring that could be claimed as good practice would involve one expert assigning scores that are then reviewed by another expert.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.2.4	1 <sup>st</sup> para	22	See comment on 3.1.1 about objectives being said to be defined from LMG. This is saying something different from 3.1.1 but I doubt if that is intended. This comment applies to equivalent text in 3.4.4, etc.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.2.4	2 <sup>nd</sup> para	22	What does 'scope' mean here?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.2.4	5 <sup>th</sup> para	23	See comment on 3.1.3 about the need to split H&S and Environmental categories into at least 'cost' and 'benefit' attributes.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.2.4	6 <sup>th</sup> para	23	See comment on 3.1.4 about minimum resources for scoring.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.3	Title	23	Why is this method called by this name?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.3.4	2 <sup>nd</sup> -last para	24	It is not obvious how this method can lead to a single option unless the pass/fail criteria happen to result in that outcome for the initial list of options. Surely a short-list is a likely outcome?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.3.4	Last 2 paras	24	As Section 4 does not evaluate the pros and cons of these two variants of non-compensatory methods, it would be helpful to present this here, or add something to Section 4.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.4.4	Last para on p26	26	Does 'preferences' mean 'relative importance'?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.4.4	1 <sup>st</sup> para on p27	27	Are the 'key criteria' 'key discriminating criteria'?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	3.7.4	1 <sup>st</sup> bullet on p33	33	1 <sup>st</sup> sentence does not make sense.
<b>SECTION 4 – SELECTING A COMPARISON METHOD</b>					
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4	2 <sup>nd</sup> bullet on p35	35	Bullet does not make sense.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4	Fig 6	36	I think the 'out of plane' axis is about scale and complexity, not just size of area.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.1	All	36-38	I found this text rather generalised and discursive, and not providing useful input to the choice of options comparison methods. See also comment on 4.4.1.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.2.2	Final 2 paras including bullets	39	I did not find this text helpful or convincing, in linking 'maturity of information' to 'tiers' of options comparison.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.2.3	2 <sup>nd</sup> para	39	It is important to clarify that the EA/SEPA guidance on BPEO (and regulatory expectation for BPEO) applies to discharges of radioactive wastes arising from nuclear sites and not to management of radioactive land contamination on nuclear licensed sites, unless or until wastes arise from its management.

Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.2.3	3 <sup>rd</sup> para	39	Please explain why 'in most cases' the regulators are expected to require more detail than Direct Evaluation or Non-Compensatory methods. This would not necessarily be the case if following CLR11 in a Part 2A or Planning context, and it is not clear why there is a presumption for more sophisticated methods for nuclear sites.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.3	Fig 7	40	It is not very clear what the two types of shading mean. Does the boundary mean the distinction between internal stakeholders + regulators and 'the rest'? See previous comments that 'Formulate plans' is really 'Set up arrangements' (or similar). 'X axis' could be more simply expressed as 'scale and complexity of contamination'. This would avoid things like 'low pathways', which don't really make sense.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.4.1	Bullet points in middle of p41	41	These bullet points are essentially a summary of Sections 4.1-4.3. As commented above, some of 4.1-4.3 (especially 4.1) is not very helpful in relation to choice of options comparison method. I suggest an expansion of the bullet points on p41 could make Sections 4.1-4.3 redundant, or a more concise form of Sections 4.1-4.3 would make the summary on p41 unnecessary.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.4.1	Table 1	42	Table title incomplete.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.4.1	Table 1	42	Other line items to consider rating the methods against: <ul style="list-style-type: none"> <li>• Suitable for strategic options comparison.</li> <li>• Suitable for technical options comparison.</li> <li>• Suitable for implementation options comparison (if this category is retained).</li> <li>• Suitable for dealing with large/complex contamination problems.</li> <li>• Suitable for use with limited/immature information on site characterisation.</li> <li>• Suitable for use with limited information on technical and/or cost attributes of potential remediation technologies.</li> <li>• Permits sensitivity analysis.</li> </ul>
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.4.1	Bullet points under Table 1	42-43	This is largely a repetition of material in Sections 3.2-3.7. It would be better to put all the text that evaluates the relative merits of different methods into Section 4 and leave Section 3 as just a description of methods.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.4.1	Figs 8-11	43-45	New term introduced: 'Dominance' method(s). Is this the same as 'Direct Evaluation'?
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	4.4.1	Figs 8-11	43-45	Is there a risk of taking this 'mapping' approach too far? I can't say I can always understand why the maps are the way they are – e.g. why two distinct fields for Trade-off Analysis in Fig 11? Can the messages not be summarised in Table 1? Using Table 1 (especially if expanded as suggested) should provide enough pointers, whereas Figs 8-11 might just become a source of confusion and perhaps controversy.
<b>SECTION 5 – APPLYING AN OPTIONS COMPARISON METHOD IN PRACTICE</b>					
<b>END PAGES (references, glossary)</b>					
<b>APPENDICES</b>					
Paul Dorfman (I)	University of Warwick				APPENDIX: Technical options for management: Technical options very general, over-simplified, plays down problems. Needs greater attention to detail, with reference to the literature. Tends to make some claims about particular options that may be problematic or open to alternative interpretation, e.g.. Ex-situ Incineration. In this sense, tends to occlude potentially

				problematic secondary reactions associated with incineration, e.g. high volatile combining producing unwanted by-products and resultant transfer and metabolism impacts
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	A - general		<p>As indicated in commenting on 3.1.2, this Appendix needs a review to ensure it is appropriate, accurate and consistent. The headings (in-situ, ex-situ, soil, etc) may be causing problems in categorising technologies that cross over the category boundaries.</p> <p>I understand that the Mallet (2004) paper did not receive the level of detailed review that this options comparison document is being subjected to, and that not everyone on the PSG (including me, with hindsight) was happy with the final product. It should not be presumed to be suitable as a source for direct cut-and-pasting into this document.</p> <p>An indication of the sources of information on unit costs should be given, and an indication of what the unit costs do and do not cover – i.e. probably only contractor costs for implementation once all the preliminaries have been put in place, an excluding site management costs during implementation.</p> <p>Also, some indication is needed of the minimum volumes for processing/waste disposal that are needed to achieve the unit costs quoted, given the well-known 'economy of scale' issues around any type of remediation – especially process-based.</p> <p>A potential way forward may be to omit the cost information if there is a consensus that there are too many caveats to make it useful, or it would take too much work to get the cost information on to a consistent and reliable basis.</p>
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	A1.2 & A2.6		'phytoremediation' should read 'phytoextraction', since that is what is being discussed.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	A.1.3 & A5.5		MNA is a groundwater remediation method (as defined by the Environment Agency). In situ decay of radioactivity in soils is something different.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	A1.4		This is about enhanced bio-remediation of groundwater.
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	A2.1		There is no available disposal route for ILW soils in the UK.
<b>GENERAL COMMENTS</b>				
<b>Does the document have a logical structure?</b>				
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Yes, apart from Section 3.		
<b>Is the document presented in a logical fashion</b>				
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Yes, apart from Section 3.		
<b>What areas could be improved?</b>				
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Mainly section 3. The headings and sub-headings are hard to follow, partly due to formatting (lack of 4 <sup>th</sup> tier heading numbers) and partly due to the use of the same 4 <sup>th</sup> -tier headings in each 3 <sup>rd</sup> -tier section. There is also overlap/duplication between Section 3 and Sections 2.2-2.3. Section 3 also contains material on the suitability of different methods in different contexts that anticipates the content of Section 4 and Table 1. This seems unnecessary duplication which could be dealt with by providing a forward reference to Section 4 at the outset of Section 3.		
<b>What areas are good examples?</b>				

Hugh Richards (O)	Magnox Electric Ltd (North Sites)	No specific suggestions.
<b>Does the guidance cover the subject comprehensively?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Broadly speaking, yes.
<b>Does it provide fundamental principles of good practice?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Generally, yes.
<b>Are there specific examples that you can think of that demonstrate the application of these principles?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Not sure what the question means – examples within the guidance or examples of implementation of the guidance?
<b>Are there areas that you feel have been skimmed over too lightly? What additional information would you like to see added?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	This options comparison guidance needs better integration with SAFEGROUNDS LMGv2, in particular consistent definition and use of terms such as context, assumptions, constraints, etc. and a consistent view of what are strategic, technical and implementation options (if the options comparison guidance is right in trying to distinguish these three levels). Also, the whole process of sub-dividing a site into areas or zones is given insufficient attention – see further General comments below. See my comments on LMGv2.
<b>Are the illustrations, tables etc. appropriate?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Yes, with specific caveats given in my detailed comments.
<b>Would more diagrams / schematics be helpful in explaining the process?</b>		
<b>What improvements could be made to the figures that are included?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	See my detailed comments.
<b>Is the target audience defined and is the content clearly targeted at the target audience?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Yes.
<b>Is the writing style appropriate?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Yes.
<b>Is the split between the information in the main body and the appendices appropriate?</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	Yes.
<b>SPECIFIC COMMENTS</b>		
<b>Is the concept of a “general approach to options comparison” useful, and are the guiding principles and guidelines sensibly described (noting that these were consulted upon in the</b>		

previous round of consultation)?		
Is the range of options comparison methods sufficiently broad and flexible?		
Is the description of the options comparison methods sufficient (bearing in mind that, if these are agreed upon, worked examples of each will be developed)?		
Is a full description of the options comparison methods in the main text helpful, or would you prefer to see the main description of options comparison methods in an Appendix, with just a summary in the main text?		
An approach has been suggested to help the selection of an options comparison method. Is this method useful?		
Is anything missing from the list of technical options, and is the level of description as anticipated?		
Have you any specific requests or suggestions for the worked examples section?		
<b>OTHER GENERAL COMMENTS</b>		
Hugh Richards (O)	Magnox Electric Ltd (North Sites)	<p>Please refer to my comments on LMGv2, especially relating to consistency of terminology between the two guidance documents.</p> <p>In this guidance document, a lot of commonly-used words are being given rather specific meanings, which should be made explicit not only a Glossary but also in the text (as in LMGv2). For example, there is a distinction between 'assessment' and 'comparison' of options (CLR11 uses 'appraisal') which is not obvious to the uninitiated. Terms like 'context', 'assumptions', 'constraints', 'objectives' also need defining and consistent application.</p> <p>Some technical terms such as 'normalised' and 'geometric mean' also need definition</p> <p>I prefer the term 'attributes' rather than 'criteria', mainly because a 'criterion' usually has a 'pass/fail' connotation, which may be appropriate for screening of options, but not for assessment/scoring of options. If there is an over-riding reason for using 'criteria' rather than 'attributes', this should be explained. Alternatively, the view may be taken (and stated) that in practice, the two terms are equivalent.</p> <p>In general, all 'titles' given to various methods, such as 'equal value scoring', 'direct evaluation', 'non-compensatory methods', 'lexographic ordering' need to have their provenance identified (at least in general terms if not by reference to the publication that first 'coined' the term). If new terms are being proposed in this guidance, this should be made explicit.</p> <p>From Section 3.1 onwards, the report assumes that there may be three 'tiers' of options comparison, namely 'strategic', 'technical' and 'implementation'. I am sceptical that 'implementation' can be separated from 'technical' options comparison exercises. It would be extremely helpful to give at least hypothetical examples of what the authors mean, and how the terms scope, context, objectives, assumptions and constraints should be applied at different 'tiers'. It may be helpful to consider the following hypothetical examples, in which I am exploring my understanding of the meaning of various terms, which may be different</p>

		<p>from what the authors have in mind:</p> <p><b>STRATEGIC OPTIONS EXAMPLE:</b>  SCOPE: The main zone of radioactive land contamination at Site X.  CONTEXT: The contamination is sufficiently large in scale that it is likely to affect the final end-state for at least the most contaminated parts of the site.  OBJECTIVES: Identify a preferred strategic option for managing the land contamination, consistent with the Environment Agency's expectations for a BPEO, taking socio-economic factors into account.  ASSUMPTION: It is assumed that the current interpretation of monitoring data is correct, namely that mobile radioactive contamination in groundwater has reached its maximum extent and will diminish in future without further intervention.  CONSTRAINTS: A number of existing buildings with deep foundations will remain within the most contaminated zone for at least 30 years.</p> <p><b>TECHNICAL OPTIONS EXAMPLE:</b>  SCOPE: All land contamination in Zone C of the Nuclear Licensed Site at Site Y.  CONTEXT: Zone C is to be de-licensed and made available for informal open space and nature conservation within 5 years.  OBJECTIVES: Identify a preferred technical option for managing the known hydrocarbon contamination in Zone C to allow the planned new use of the land, compatible with the work needed to allow de-licensing (see Assumption 1).  ASSUMPTIONS: (1) It is assumed that the only radioactive contamination in Zone C that will need to be addressed to achieve de-licensing is a small patch of surface contamination close to the boundary with Zone B. (2) It is assumed that the sole significant source of the hydrocarbon contamination in Zone C was a leak from the oil interceptor (also in Zone C).  CONSTRAINTS: The oil interceptor will continue in service for the next 3 years.</p> <p><b>IMPLEMENTATION OPTIONS EXAMPLE (?)</b>  SCOPE: The unauthorised asbestos burials within Zone F of site Z.  CONTEXT: Zone F will remain within the secure site for the next 10 years, after which Zone F is to be part of the land-holding put up for sale. Zone F must be remediated, by removal of the buried asbestos, prior to sale.  OBJECTIVES: Identify whether the remediation should take place immediately or closer to the time of sale, taking account of current and projected future availability of disposal routes for the waste asbestos.  ASSUMPTIONS: The volume of asbestos waste that will have to be removed is assumed to be in the range 100 – 1000 m<sup>3</sup>, based on surveys undertaken to date.  CONSTRAINTS: The local landfill that receives asbestos waste will close in 3 years time.</p> <p>For sites (or areas of sites) with limited contamination that could be fairly easily dealt with by one or more technical options, the overall land management strategy, (including redevelopment or release for amenity use as well as dealing with contamination) is likely to be of more interest to many external stakeholders than the contamination issue as such. The consideration of options for the overall land management strategy, and the consultation processes involved, are likely to be through the Planning regime or similar less formalised processes where Planning consent is not required. This reality should be captured within the guidance, so that, in the name of 'following the guidance', problem-holders do not embark on unnecessarily complex consultative options comparison exercises that few if any stakeholders are inclined to engage with.</p> <p>There is an implicit presumption that options comparison at any given 'tier' of decision-making should only be done once, using one suitable method. I think the report should discuss the pros and cons of doing preliminary options comparison exercises, not intended to inform an immediate decision, but which could be undertaken for one or more of the following reasons:</p> <ul style="list-style-type: none"> <li>• To provide a framework for opening up discussions with stakeholders</li> <li>• To help identify key uncertainties that will need to be resolved before a reliable comparison of options can be done (e.g. by undertaking further characterisation work or exploring alternative future land uses).</li> </ul>
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Marion Hill (I)	Individual	<p>The overall content of the document is fine and it reads well. However, the main text of the document seems too long and somewhat academic. It would help if most of Sections 3.2 to 3.7 were moved to Appendix B.</p> <p>I am not convinced there is enough practical guidance on the choice of comparison method and how to apply the various methods. The 'maps' in Section 4 (Figures 8-10) are a lot less useful than Table 1. Would it be possible to condense the information in the maps in some way? Perhaps a summary could be added to capture the key information (eg linear additive methods are the most widely applicable, whilst it is rarely worth going to MCDA).</p>
Paul Dorfman (I)	University of Warwick	<p>Some good work and thinking involved, however, quite a long and detailed document for such an early stage. A number of leading comments made that seem to expand the remit of the work.</p>

**Please note the following:**

**(I) - Individual**

**(O)- Organisation**

**(C)- Constituency**