Respondent Details	
Name:	Dr William J. Nuttall

Please select the category below which best describes who you are responding on behalf of.

☐	Business representative organisation/trade body
☐	Central Government
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X	Individual
☐	Large business (over 250 staff)
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☐	Local Government
☐	Medium business (50 to 250 staff)
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The consultation document sets out the Government's proposed approach to the longer term management of the UK's plutonium stocks for public scrutiny and consultation. Comments on any aspect of this issue are welcome, but the key questions posed in this consultation are:

No	Question
Q1	Do you agree that it is not realistic for the Government to wait until fast breeder reactor technology is commercially available before taking a decision on how to manage plutonium stocks?
Response	Yes It is wise to come to a decision in the near term and before fast breeder technology becomes available. I agree that such technology is not currently available in a form suitable for use at scale in the UK. The absence of an early decision, or the selection of option 3, will reduce and shift the range of options available in the future. For instance continued storage in oxide form would lead to a worsened isotopic mix. In considering option 3 the potential for beneficial innovation should be better recognised. Some future technologies (such as accelerator-driven sub-critical fast reactors) may have a role to play in the event that option 3 were to be selected, or the decision delayed for a long time. The potential for such future innovations is not however sufficient reason to delay an early plutonium decision or to favour option 3.
Q2	Do you agree that the Government has got to the point where a strategic sift of the options can be taken?
Response	No, I suggest a brief pause and reassessment for the reasons given below.
Q3	Are the conditions that a preferred option must in due course meet, the right ones?
Response	Broadly yes, but I would suggest separating 'health safety and environmental objectives' from 'non-proliferation and security objectives' as individual bullet points in a list of four issues in total.

	I would hope and trust that the ‘value for money’ consideration would be considered in a broad sense including possible impacts on the liberalised UK market in electricity generation. The ‘price’ of MOX fuel for generators could be an important question and the electricity market impacts should be modelled for a range of possible future uranium price scenarios.
Q4	Is the Government doing the right thing by taking a preliminary policy view and setting out a strategic direction in this area now?
Response	The desire to take a preliminary policy view is correct, but I am slightly concerned that the consultation document is not of the depth and scope needed for a policy decision of this importance. I am concerned that government may not have the necessary deeper body of reliable knowledge at the disposal of its policy makers. I note and commend the report of March 2011 entitled: *A low carbon nuclear future: Economic assessment of nuclear materials and spent nuclear fuel management in the UK* from Smith School of Enterprise and the Environment at Oxford University. Work of that depth is needed to inform good policy making, but that study does not cover all the relevant issues. I suggest that the consultation be re-run with a stronger evidence base. There are other reasons that a small delay would be helpful – see below.
Q5	Is there any other evidence government should consider in coming to a preliminary view?
Response	The consultation document is correct in stressing the importance of the May 2010 Non Proliferation Treaty Review Conference and the framework and guidance this provides for UK policy development. I strongly urge visible, prompt and tangible compliance with the agreed decisions of that conference. As regards the long-term trajectory of the NPT regime I suggest that the Nuclear Weapon States should help build a single global approach to the civil nuclear fuel cycle – something I have termed ‘one fuel cycle for all’. Clearly each nuclear weapon state has its own

	particular legacy issues. For the UK the key issue is the subject of this consultation - separated plutonium. Clearly the UK would not today seek to separate 112 Tonnes of plutonium from spent fuel, but it is a legacy we must tackle. We should choose an option that reduces this problem, for it is a problem. We should make that decision in a way consistent with a planned long-term shift towards a civil nuclear energy system that we would not mind seeing in any other country. Utilisation of UK plutonium in a once through MOX cycle appears to be the most sensible and constructive suggestion. However, it should be on the understanding that this is as part of a transitional policy and as far as possible it stands separate from the UK nuclear renaissance. Most new build nuclear power stations should not use MOX fuels, especially because, as I understand things, MOX has not been mentioned in the formal justification process for currently proposed new build. Not wishing to see paramilitary convoys (e.g. of fresh MOX fuel) on the public highway, I suggest that the MOX fuel should only be used in a new nuclear power station adjacent to the Sellafield site. The economics of the operation of that plant will need to be treated carefully, i.e. involving OfGEM, if such a project is not to provide distortions to the UK liberalised electricity generation market. A clear, distinct transitional policy based on a declared long-term plan should be provided for the MOX burning power plant(s) and the MOX production plant consistent with a long-term goal of ‘one fuel-cycle for all’. The consultation document does not describe some issues which seem to be of importance. One example concerns the origins of the Sellafield MOX Plant and its role in managing overseas plutonium, particularly for Japan. The Japanese situation was already complex before the Fukushima-Daiichi accident in March 2011. That accident is of special significance, as it was the first major accident involving MOX fuel (in unit 3). In addition, as a consequence of Fukushima-Daiichi accident, the Japanese government has recently announced its concerns regarding the Hamaoka Nuclear Power Plant. That station has a direct relationship with Sellafield MOX. In summary I suggest it is not helpful to consider the UK policy question separate from the wider global issues. Chapter 4 of the consultation document

	is insufficient. The Fukushima-Daiichi accident has also had direct consequences in the UK for nuclear new build. The Generic Design Assessment of the two proposed designs is at least delayed by some months. If the new build programme were to stall, then the MOX-fuel option would become untenable. I suggest a pause for reflection is needed, given recent events in Japan.
Q6	Has the Government selected the right preliminary view?
Response	Probably, but the evidence base for the decision seems shallow and much has changed since the consultation paper was issued. A serious rethink is needed and perhaps a reissued consultation.
Q7	Are there any other high level options that the Government should consider for long-term management of plutonium?
Response	Allison Macfarlane has considered the possibility of 'storage MOX' – using existing MOX facilities to produce a low-grade product only suitable for disposal as a waste. I note that such issues are referred to in section 6.7 of the consultation paper, but they are dismissed. I do not recommend the disposal MOX option as a solution, but I would like to bring Macfarlane's work to government's attention. Her ideas and observations were published in a special issue of Progress in Nuclear Energy (vol. 49 number 8 2007) on the topic of 'Options for the Long-Term management of Separated Plutonium' for which I was lead guest editor. Macfarlane's paper is entitled 'Another option for separated plutonium management: Storage MOX' (ibid. pp. 644-650). Macfarlane states: 'the SMP could fabricate all of the UK's projected stock of 92 tonnes of plutonium into storage MOX in little over 5 years running at full capacity'. I note the capacity problems associated with the SMP, but I suggest that the Consultation Paper's assertion that 'it is unrealistic to suggest that such a total solution can be delivered using existing plant' is carefully re-considered by an independent assessor.