

**THE FUTURE OF NUCLEAR POWER:  
THE ROLE OF NUCLEAR POWER IN A LOW CARBON UK ECONOMY**

**CONSULTATION RESPONSE BY RWE NPOWER**

**BACKGROUND**

1. RWE npower, part of the RWE Group, owns and operates one of the largest and most diverse portfolios of power generating plant in the UK with over 10,000 megawatts (MW) of large gas, coal and oil-fired power stations, cogeneration plant and renewables facilities. Our retail arm, npower, is one of the UK's leading suppliers of electricity and gas with around seven million customers. npower serves the residential, small to medium enterprises and industrial and commercial sectors and offers competitive, advanced solutions for its customers, including energy efficiency and energy management services.
2. In replying to the present consultation on the future of nuclear power, we are able to draw both on our long history of developing large energy infrastructure projects in the UK, and on our parent company RWE's extensive experience of operating and decommissioning nuclear plants in Germany.

**OVERVIEW**

3. Last year we responded to the Government's proposals for a policy framework for new nuclear build in the UK contained in Annex A of its Energy Review report, "The Energy Challenge". We set out our view that a market-based, long-term framework, which provides the appropriate signals for investment in a diverse energy mix, will make it possible to reconcile the UK's energy policy goals of carbon reductions, secure and affordable supplies of energy and competitive energy markets.
4. We also stated our belief that, providing that a robust public policy and regulatory framework for new nuclear power stations in the UK can be established and public acceptance achieved, new nuclear power stations could play a role in meeting energy policy objectives alongside other low carbon technologies such as renewables and clean coal. We therefore supported the facilitative actions proposed by the Government to create an option for companies wishing to invest in new nuclear power stations. We

noted, however, that potential developers would be likely to require certain important pre-conditions including:

(i) legislative and policy changes to planning and licensing regimes for new nuclear build in order to provide sufficient confidence in the expected time required to achieve planning consents and technology licences;

(ii) the implementation of a process leading to the identification and licensing of a site or sites for the long-term disposal of all radioactive waste. This process must also address wastes from any new reactor programme and the mechanisms for funding of such disposal must be clear; and,

(iii) clarity about the process by which potential investors may acquire existing sites for new nuclear power stations.

5. We are still supportive of the conclusions of our “Annex A” response, while welcoming the further opportunity provided by the present “in-principle” nuclear consultation for us to reiterate our support for the role that a diverse generating mix can play in achieving reductions in carbon emissions and secure supplies of energy. We therefore welcome the Government’s preliminary conclusion that energy companies should be given the option to invest in new nuclear power stations.
6. We will continue to play a full part in the energy policy debate in order to clarify and encourage a better understanding of the issues involved. The consultation also offers the public the opportunity to consider the potential benefits that new nuclear power stations, which would be a source of very low carbon generation and would increase diversity, could play in this regard.
7. Investment timescales and the urgency of responding to energy and environmental policy objectives mean that it is important to avoid any delay in making the nuclear option available if it is to have a future role in the UK. We therefore welcome the Government’s decision to proceed on a contingent basis with consultations for the processes to be followed during Justification and the Strategic Siting Assessment (SSA) and to allow the regulators to proceed with the initial phases of Generic Design Assessment (GDA). As part of our commitment to work towards developing nuclear power as a low carbon option for future investors, we have already confirmed our intention to support three designs, which we believe are capable of deployment in the UK in the period 2016-2022, through the GDA process.

8. Our responses to the detailed questions contained in the consultation are given below, while our responses to the accompanying consultations on the proposed processes for Justification and SSA are set out in a separate document.

## **RESPONSE TO THE FUTURE OF NUCLEAR CONSULTATION QUESTIONS**

### **Question 1. To what extent do you believe that tackling climate change and ensuring the security of energy supplies are critical challenges for the UK that require significant action in the near term and a sustained strategy between now and 2050?**

9. The electricity sector is currently responsible for around 30% of the UK's total emissions and has delivered the bulk of the CO<sub>2</sub> emission reductions achieved since 1990. The Energy White Paper "Meeting the Energy Challenge" shows just how challenging the UK CO<sub>2</sub> reduction target for 2020 is (i.e. the reduction of 26-32% in the draft Climate Change Bill). Figure 10.1 on page 284 of the Energy White Paper suggests that the combined measures proposed by it would achieve only the lower end of this range at the very best. It will therefore be critically important that the Government develops a wide-ranging policy framework, which ensures the engagement of all sectors of the economy in delivering further reductions, if the 2020 and 2050 targets are to be achievable. This implies the need for a radical change in the approach to energy policy across all sectors of the economy, not just the electricity sector.
10. Notwithstanding this, we believe that moving to a low carbon economy while maintaining affordable and secure supplies of energy represents the biggest challenge the energy industry has faced. Substantial investments are required to replace existing nuclear and coal-fired plants as they are retired and to meet predicted demand growth. Estimates are for up to 35 GW of new capacity required at a cost of £30-40 billion. These investments must favour low carbon technologies and are required in the near-term.
11. Industry requires a stable framework and welcomes a sustained strategy in order to plan these substantial investments. This applies equally to ensuring a future market for carbon (with the European Union Emissions Trading Scheme (EU ETS) aligned to investment cycles) and to the predictability of carbon reduction targets offered by the draft Climate Change Bill. A carbon

management system based on five-year carbon budgets as set out in the draft Climate Change Bill would seem appropriate, provided these are always set out sufficiently far in advance (i.e. at least 15 years in advance) to align with investment timescales. However, whatever timeframe for setting targets is chosen, it should ideally be aligned with other EU targets and international obligations which we would ideally like to see set out to at least 2030. Equally, the rules under the EU ETS for determining both the scarcity of allowances at EU level and allocating any free allowances to existing and new entrant plant need to be clear over a similar period.

**Question 2. Do you agree or disagree with the Government’s views on carbon emissions from new nuclear power stations? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

12. Nuclear power is well established as an internationally proven, low carbon technology. Its total lifetime releases (i.e. including emissions associated with construction and decommissioning of nuclear plants, and with mining, transportation, enrichment, fuel manufacture and spent fuel storage) are comparable with other low carbon technologies such as wind power and this has been confirmed by a number of studies (see table below, for example). In addition it produces no or very low emissions of sulphur dioxide and nitrogen oxides.

Total Lifetime Releases From Selected Technologies

<b>Technology (2005-2010)</b>	<b>GC/kWh*</b>	<b>Equivalent to GCO<sub>2</sub>/kWh**</b>
Lignite	228	836
Coal	206	755
Natural gas	105	385
Biomass	8-17	29-62
Wind	3-10	11-37
Nuclear	3-6	11-22

\*Grams of carbon per kilowatt hour of electricity produced

\*\* Grams of carbon dioxide per kilowatt hour of electricity produced

Source: OECD Nuclear Energy Agency, reproduced from “The Energy Challenge”, July 2006

13. In the table above, the comparative figures used for coal and gas are for state of the art new technologies, rather than existing coal and gas-fired plant. In the absence of Carbon Capture and Storage (CCS) (see paragraph 20

below), therefore, nuclear would continue to enjoy a significant advantage in terms of its lifetime carbon emissions compared to coal and gas.

14. The scale of nuclear power stations means that the electricity generated by a relatively small number of new nuclear power stations would have an enormous impact in terms of avoided carbon emissions for the UK. We note, for example, the statement in the future of nuclear consultation document (paragraph 24) that replacing existing nuclear power stations with fossil fuel-fired power stations would result in emissions between eight and sixteen MtC (million tonnes of carbon) a year higher (depending on the mix of gas and coal-fired power stations).
15. This would be equivalent to about 30-60% of the total carbon savings projected to be achieved under the Government's central scenario from all the measures proposed in the Energy White Paper. As part of a broad and well-balanced energy mix, nuclear can therefore play a significant role in meeting government targets and energy policy objectives.

**Question 3. Do you agree or disagree with the Government's views on the security of supply impact of new nuclear power stations? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

16. As explained in answer 1 above, there is a need for a substantial amount of new low carbon generating capacity in order to fill the "energy gap" caused by the retirement of current coal-fired and nuclear capacity and predicted electricity demand growth.
17. Electricity market participants value diversity but will build the generating capacity that is lowest cost and lowest risk. To this end, current environmental legislation clearly favours gas-fired plant, resulting in only Combined Cycle Gas Turbine (CCGT) projects being positioned to add new capacity to the system. The result of this "business as usual" scenario is that the UK would be highly dependent on gas-fired generation and on imported gas. While it is inevitable that further gas-fired generation capacity will be built to meet future demand, this will not have the effect of reducing overall carbon emissions and, in the long term, is likely to increase the UK's reliance on imported gas. Furthermore, concentrating on one technology – in this case CCGTs – runs the risk that all plants of that technology may be affected as the result of a single unfavourable market development, such as very high fuel prices.

18. We believe that a diverse mix of fuels for electricity generation, with the scope for a significant share of new nuclear, will provide greater security of supplies, avoid over-reliance on one fuel and reduce generation plant portfolio risks. We do not believe, therefore, that security of supply should be achieved by building nuclear power stations alone and, indeed, private investors are unlikely to “bet” on one single technology but rather seek to build a diverse portfolio to hedge their risks. Furthermore, security of supply is more likely to be ensured by exploiting all effective supply and demand options.
19. Renewable energy sources, therefore, will play an important role in meeting demand and we welcome the Government’s renewed commitment to the Renewables Obligation. However, the intermittent nature of renewable energy production, particularly wind power, together with planning and grid connection constraints, means that its contribution will still need to be balanced by large-scale, low carbon generation. Equally, on the demand side, energy efficiency measures must play a significant part in curbing demand growth and we are already active in encouraging our customers to adopt energy efficient solutions and products such as smart metering.
20. Coal or gas-fired plants equipped with carbon capture and storage (CCS) represent a potential source of low carbon generation for the future, but CCS is still at the research and development stage. In addition to technological aspects there are many other issues yet to be resolved. These include significant regulatory and legal issues (for example, carbon transport and storage infrastructure, the treatment of CCS under the EU ETS and international agreements and the ownership of long-term liabilities).
21. Nuclear is the only virtually carbon free and internationally-proven technology capable of providing large-scale baseload generating capacity within the timescales indicated by Government (2016-2022). Furthermore, the uranium required to fuel existing and potential new stations is readily available and occurs in politically stable countries (see response to question 12) in different geographic locations, for example, than the sources of gas supplies. The volume requirements for a new programme of reactors in the UK would be relatively small and there is the potential to stockpile fuel easily if required, thus enhancing security of supply.
22. Given the urgency of the timescale and the long lead times associated with new nuclear power stations, it will be essential that the Government facilitates

a tight programme for the planning and licensing of new nuclear power stations to ensure that energy companies can benefit from the opportunity to secure bulk supplies of low carbon generation while maintaining the diversity of their generating portfolios.

**Question 4. Do you agree or disagree with the Government's views on the economics of new nuclear power stations? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

23. We welcome the reaffirmation by the Government of its support for the view that new nuclear plants can be economic against a wide range of gas and carbon prices. We believe that if the Government provides investors with the option to invest in new nuclear plants by delivering the appropriate policy, planning and licensing framework, including a long-term carbon pricing mechanism, they will take the decision to invest on the basis of market conditions at the time.

24. Investors will want to ensure that the full costs of waste management and decommissioning of new facilities are included when assessing the economics prior to taking investment decisions. RWE has more than 40 years of first-hand experience of decommissioning nuclear power stations and for treating and storing radioactive waste including technology as well as cost aspects. However, decommissioning, waste management and final disposal costs are also influenced by government decisions and associated regulation. The Government therefore has to play its part by clarifying the arrangements for funding waste and decommissioning costs and by underwriting its commitment to provide a final disposal facility for both legacy wastes and new plant waste.

**Question 5. Do you agree or disagree with the Government's views on the value of having nuclear power as an option? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

25. As described in our answers to questions 1-4, we agree that nuclear power could be an attractive option for investors as it is an internationally proven, large-scale and low carbon technology capable of playing a key part in maintaining diverse, and therefore secure, energy supplies. Although it does not provide all of the answers and the future energy mix is hard to predict,

nuclear power has the potential to continue to be an important part of the solution to the UK's carbon reduction and security of supply concerns.

26. However, before nuclear power can be a realistic option and play a role in a diverse generation portfolio, the Government must deliver the robust policy, planning and licensing framework together with the public and investor confidence that is needed to allow market operators to take the correct investment decisions. Government must deliver this framework as soon as possible given the investment timescales involved and the urgency of the climate change issue.

**Question 6. Do you agree or disagree with the Government's views on the safety, security, health and non-proliferation issues? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

27. Strong independent regulation of safety, security, health and non-proliferation issues for nuclear power stations is provided by a number of agencies. The Nuclear Installations Inspectorate (NII), part of the Health and Safety Executive (HSE), ensures the safety of nuclear installations. The Office for Civil Nuclear Security (OCNS) ensures the security of nuclear facilities. The Environment Agency (EA) and Scottish Environment Protection Agency (SEPA) ensure that radioactive waste disposals and other environmental impacts are correctly managed. Non-proliferation is secured through safeguards managed through a strict national and international regulatory framework under the EURATOM treaty and the International Atomic Energy Authority (IAEA).

28. As a result of these rigorous safety regimes nuclear installations have an exemplary safety record worldwide. Nuclear power plants are designed and built according to the "defence in depth" philosophy, which gives them the structural resilience to withstand safely extreme conditions such as fire and earthquake or threats from aircraft crash. The safety of employees, contractors and the public is a top priority and is assured both by robust design and rigorous management of safety. Stringent security measures are also in place to ensure the security of nuclear facilities.

29. Internationally, operators of nuclear power plants exchange information and work together in order to improve the operational safety of nuclear power stations. This is ensured, for example, both through the industry owned World

Association of Nuclear Operators (WANO) and under the auspices of the IAEA.

**Question 7. Do you agree or disagree with the Government's views on the transport of nuclear materials? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

30. The transport of radioactive material has been carried out safely and securely around the world and in the UK for many years. It is regulated within international and national safety frameworks and controlled by national regulators. International regulatory requirements aim to ensure the ongoing safety of transport. Spent fuel is transported in highly robust containers that have been subject to rigorous testing to demonstrate that they would remain intact even in the event of a transport accident. The risks of transporting nuclear materials to workers and the public have been demonstrated to be very small.

**Question 8. Do you agree or disagree with the Government's views on waste and decommissioning? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

31. Waste and decommissioning issues associated with nuclear power generation have been successfully resolved around the world using well-established procedures and technologies. The UK has a strong, robust and independent nuclear regulatory regime which should be capable of helping to deliver a safe but cost effective solution for the final disposal of UK legacy wastes and wastes arising from a new programme of nuclear power stations in the UK. It will be important that all potential host communities and other key stakeholders are fully engaged and consulted as proposals for potential sites for a final repository are developed.

32. The provision of a long-term solution in the UK will require significant political will. We are aware that the Government is working hard to resolve the issues surrounding the provision of a final repository for UK radioactive wastes and we support the Managing Radioactive Waste Safely (MRWS) process. We will be commenting directly on this process in our response to the Government's consultation on a framework for implementing geological disposal. However, we believe that, before investing, potential investors in

new nuclear plants are likely to require the implementation of a process leading to the identification and licensing of a site or sites for the long-term disposal of all radioactive waste. This process must also address wastes from any new UK reactor programme and the mechanisms for funding of such disposal must be clear.

33. There is extensive international experience of managing reactor wastes, reflecting the best technical, governance and social practices. The quantity of radioactive waste arising from new, modern nuclear power plants would be less than from existing plants per unit of electricity generated and would represent a small proportion of the UK legacy wastes, which are currently being managed by the Nuclear Decommissioning Authority (NDA) on behalf of the Government. Potential developers of new nuclear plants acknowledge their responsibility to manage safely all the radioactive wastes arising from the operations and decommissioning of their plants and to meet the costs of doing this, but will require leadership from Government and an appropriate framework to work within.
34. Whilst the Government will need to be satisfied that it can confidently accept responsibility for the small additional quantity of waste which will be created by a new nuclear build programme, this does not accelerate the timescales on which a final waste repository will be required. Wastes may not need to be exported from the plant site for several decades.
35. The operators of new nuclear plants will be responsible for safe and secure interim storage of spent fuel and other radioactive wastes on site prior to a repository being opened. They will require authorisations to allow the construction and use of on-site, long-term interim spent fuel stores in order to have confidence and flexibility in the management of the back-end of the nuclear fuel cycle, i.e., after the fuel has been discharged from the nuclear reactor.
36. Decommissioning of reactors of the type that would be constructed in a new build programme is now a mature and well understood technology. No new techniques will be needed to decommission new nuclear power stations. In fact, lower waste volumes and proper conditioning of wastes as they arise in operation mean that the challenges of decommissioning are much less compared to earlier generations of nuclear power stations in the UK. Proven techniques and equipment are available to dismantle nuclear facilities safely. RWE, for example, has practical hands-on experience of decommissioning

several of its own nuclear plants in Germany (for example, the 237MW Gundremmingen A and 240MW Lingen boiling water reactors (BWR) and the 1312MW Mülheim-Kärlich pressurised water reactor (PWR)). To date, worldwide, more than 100 commercial power reactors have been shut down and of these 14 have been completely decommissioned. In the UK, installations representing the full range of fuel cycle facilities have been successfully decommissioned.

37. As experience is gained, decommissioning costs for nuclear power plants, including disposal of associated wastes, are reducing and contribute only a small fraction of the total cost of electricity generation. Future reactors will be easier to decommission than the UK's current fleet because they are physically smaller, have more accessible components and use fewer components, so producing smaller volumes of waste. Wastes from a new build programme are only likely to be of the order of about 10% by volume of the total waste to go into the eventual repository.

**Question 9. What are the implications for the management of existing nuclear waste of taking a decision to allow energy companies to build new nuclear power stations?**

38. While we have confidence in government actions to develop radioactive waste management arrangements in the UK, involving the NDA and the re-constituted Committee on Radioactive Waste Management (CoRWM), there needs to be early clarity for wastes from a new reactor programme. CoRWM's recent report dealt with the management of waste from existing facilities and recommended the adoption of deep geological disposal following a period of storage. We note that the Committee has indicated that, in principle, such a repository could be extended to accommodate the disposal of operational and decommissioning wastes from a new reactor programme.

39. We believe that waste from new nuclear power stations should share the same repository with legacy waste and recognise that the MRWS process will examine this. Wastes from a new build programme are only likely to be of the order of about 10% by volume of the total waste to go into the eventual repository. Clearly, an implication of disposing of waste from a new programme in the repository is that it may have to be available to receive waste for a longer period of time.

40. The Government is best-placed to assume long-term responsibility for spent fuel and intermediate level waste because of their very long-lived nature and it should have long-term responsibility for ensuring their safe storage or disposal. However, responsibility for the costs of long term storage or disposal should lie with the owners of new nuclear plants, who must meet their fair share of the costs of new operational and decommissioning wastes arising. We note that the Government is currently developing plans to ensure that operators make appropriate financial provisions to meet the costs of waste and decommissioning so that operators and not the public purse bears the cost of these activities. We are supportive of Government's work in this area.

**Question 10. What do you think are the ethical considerations related to a decision to allow new nuclear power stations to be built? And how should these be balanced against the need to address climate change?**

41. The challenges of tackling climate change and ensuring secure supplies of energy at affordable prices mean that customers and society will have some difficult choices to make in the coming months and years.

42. While the development of new nuclear stations will lead to the creation of new radioactive waste and add to the legacy of waste for future generations to address, the technical issues associated with disposal of long lived radioactive waste in deep repositories are well understood and solutions either have been or are being developed. In fact a deep repository provides a safe way of disposing of long lived waste even for the very long timescales it will remain radioactive.

43. We also have a responsibility to future generation to implement measures to combat climate change and ensure security of energy supplies in the most sustainable and cost-effective manner. Urgent solutions are required and nuclear power is a proven technology that could be mobilised quickly at low risk. New nuclear power stations could therefore play a significant role in reducing carbon emissions and enhancing security of supply, outweighing the risks associated with their construction and operation and the very small risks associated with disposing of the waste produced.

44. Further significant economic benefits will arise for local communities in the vicinity of new nuclear power stations. These benefits will accrue both in the short (construction phase) and longer (operation and decommissioning

phases) terms and contribute to the sustainability of local economies. It will be important that development is implemented in a sympathetic manner with appropriate local consultation.

**Question 11. Do you agree or disagree with the Government's views on environmental issues? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

45. We welcome the thorough examination of the generic environmental impacts of a new nuclear programme that will be implemented through the strategic siting and environmental assessments. Appendix 1 to our consultation response sets out our comments on the proposed processes for SSA/SEA.

46. Providing that potential nuclear sites comply with the criteria established through these processes, we believe that the rigorous application of existing environmental regulations and legislation, including the requirement for a site specific environmental impact assessment and appropriate measures to mitigate any impacts identified, will provide the appropriate environmental protection.

47. We note that DEFRA is currently reviewing the UK's radioactive discharge strategy to present the UK's updated position at the 2010 conference of Ministers. The new strategy needs to allow for potential new build scenarios.

**12. Do you agree or disagree with the Government's views on the supply of nuclear fuel? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

48. Using IAEA figures it is possible to make a high-level estimate that reserves in the world's major exporters of uranium, Australia and Canada, based on current estimated resource and production levels will last another 150 years and 45 years respectively (Source: "The Energy Challenge", Annex A, page 181.). The costs of nuclear generation are relatively insensitive to uranium prices, as uranium represents around 10% of total generation costs.

49. About half of conventional known resources are located in stable OECD countries. The uranium resource is sustainable, with adequate known resources being continuously replenished at least as fast as they are being used. The essential dynamic is the strength of market forces as the market is constantly evolving through advances in human knowledge and the

technologies of exploration, mining, and resource utilisation. Depletion of today's known uranium resources will be more than counterbalanced by replenishment from new discoveries and technical progress.

**Question 13. Do you agree or disagree with the Government's views on the supply chain and skills capacity? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

50. The Government's assessment of the UK and global situation regarding replacement and new nuclear build requirements appears to be soundly based. Particularly the view that the timescales involved in developing and delivering a nuclear new build programme are such that it should be possible to address any deficiencies in skills, resources and manufacturing capacity. The key to this is industry confidence that a new build programme will go ahead and lead to construction of a series of new nuclear power stations.
51. A new nuclear build programme will require some specific skills, particularly in the areas of safety and licensing, nuclear science and engineering and environmental science. These skills will also be demanded by other areas of the industry and it is therefore important to encourage young engineers and technologists to come into the nuclear industry.
52. The industry's own initiatives coupled with government investment through the Sector Skills Council for the nuclear industry (Cogent) and the Engineering and Physical Sciences Research Council (EPSRC) is leading to the establishment of research and training programmes and a National Skills Academy for Nuclear. The close links between these initiatives, academia and industry should ensure the skills required to deliver a new build programme are developed.
53. More generally, the skills requirements for a nuclear new build programme are common to all major energy projects, so similar resource issues will be faced by all developers of all kinds of energy infrastructure over the next two decades.
54. The resource requirements for construction and installation represent only a small percentage of the UK resource pool (e.g. programme management and technical support around 1-5%; civil engineering and construction 2-3%; manufacturing around 4-5%; and site installation 4-5%). If necessary, it would

be relatively easy to increase the resource pool by 5% as long as industry was confident that a programme would proceed according to a clear timeline.\*

55. Though the UK supply chain may have lost the capability to supply some of the larger power station components it still has the capability to supply over 70% of a new nuclear station. The UK does have strong capability in programme, project and construction management and in civil engineering construction and plant installation and as indicated above a nuclear new build programme will require only a small percentage of the UK capability in these areas.

56. Given the necessary confidence in a new nuclear build programme, industry will invest in training and resource development and manufacturing capability. Most significantly the placement of firm orders with reactor vendors will in turn enable orders for globally sourced components to be placed and ensure that UK requirements get a firm slot on critical order books.

\*See Nuclear Industry Association, *UK capability to deliver a new nuclear build programme*. NIA, London, 2006.

**Question 14. Do you agree or disagree with the Government's views on reprocessing? What are your reasons? Are there any significant considerations that you believe are missing? If so, what are they?**

57. We agree that new nuclear build in the UK should proceed in accordance with the Government's assumption that there should be a "once-through" fuel cycle for new nuclear power stations. Accordingly, spent fuel should be stored safely at the power station site for an interim period prior to disposal in a geological repository.

58. Waste volumes from new nuclear power stations for disposal in a new repository should therefore include spent fuel and each operator should therefore bear an appropriate share of the disposal costs. On-site storage of spent fuel must not lead to any reduction in government efforts to provide safe final repositories for wastes including spent fuel at the earliest possible time. The Government must provide potential investors with confidence that appropriate disposal routes will be available.

59. Though we agree that a "once-through" fuel cycle should be the reference case, we also recognise that during the operational life time of a new nuclear programme the economic, technical and fuel supply parameters may change,

making reprocessing a viable option. We therefore recommend that the option to introduce proposals for reprocessing in the future, subject of course to the production of a safety case and licensing, should be retained.

**Question 15. Are there any other issues or information that you believe need to be considered before taking a decision on giving energy companies the option of investing in nuclear power stations? And why?**

60. Nuclear power is a well established technology worldwide that is able to contribute to reducing carbon emissions and secure supplies of energy as part of a diverse energy mix. If the Government decides that energy companies should be given the option to invest in new nuclear plants in the UK, account must be taken of the acceptability of international designs from major reactor vendors already approved by other states' nuclear safety regulators. This has the potential to reduce the extent of assessment work needed to be done by the regulators, shorten lead times and support standardisation which has significant safety and performance benefits.
61. As indicated elsewhere in our response, in addition to the facilitative actions proposed by the Government (see also our response to question 18), industry requires a stable policy framework and would welcome sustained political support in order to plan the huge investments required to meet the "energy gap". This applies equally to ensuring a future market for carbon (the EU ETS should be aligned to investment cycles) and to the predictability of carbon reduction targets.
62. An additional consideration is preserving transmission capacity and access for new nuclear power stations. The Office of Gas and Electricity Markets (OFGEM) has recently called for evidence for a review of transmission access for renewables. OFGEM's consultation document highlights two key concerns that are also important for projects with long lead times such as nuclear power stations. These concerns are the length of time to build required transmission infrastructure and the perceived inflexibility of industry access rules. It will also be important that developers of new nuclear power stations will be able to achieve certainty of connection to the system at the appropriate stage in their development. We are therefore concerned that the Government/OFGEM should, bearing this in mind, take steps to preserve transmission capacity and access for sites nominated as part of the SSA process. This will be essential if new nuclear is to contribute to the twin objectives of reducing carbon emissions and ensuring secure supplies of energy in a timely manner.

**Question 16. In the context of tackling climate change and ensuring energy security, do you agree or disagree that it would be in the public interest to give energy companies the option of investing in new nuclear power stations?**

63. We believe that nuclear power needs to be one of a package of options available to energy companies to help them tackle the challenges of the transition to a low carbon economy and providing secure supplies of energy at affordable prices.

64. Please see also our earlier responses, particularly to questions 1-5.

**Question 17. Are there other conditions that you believe should be put in place before giving energy companies the option of investing in new nuclear power stations? (for example, restricting build to the vicinity of existing sites, or restricting build to approximately replacing the existing capacity)**

65. Strict environmental and legal requirements already govern the process for planning, constructing, operating and decommissioning nuclear power stations, including measures necessary to mitigate their local and site specific impacts. Furthermore, developers will bear their full and fair share of waste and decommissioning costs and make provisions for these in within a secure funding framework. Provided that Government delivers the appropriate policy, planning and licensing framework to remove uncertainty and delay, we therefore see no need for further conditions to be placed upon potential investors.

66. Access to potential nuclear power station sites, which are presently concentrated in the hands of a few organisations, is a key issue for potential investors. The Government therefore needs to monitor very carefully how a market for sites develops and investors will need a clear indication of the availability and public acceptability of consentable sites.

67. We believe that the proposed SSA process and the associated siting criteria will provide an adequate means of identifying suitable sites. The introduction of arbitrary restrictions would potentially exclude viable sites and reduce the number of sites available for development. It should therefore be left to the developers to decide which and how many sites should be developed.

**18. Do you think these are the right facilitative actions to reduce the regulatory and planning risks associated with such investments? Are there any other measures that you think the Government should consider?**

68. We support the staged approach to establishing new nuclear build as an option through the creation of a robust policy, planning and licensing framework.
69. If nuclear is to contribute to meeting the “energy gap” predicted by the Government, investors require that an ambitious timetable for planning and licensing is adhered to. There are also many interdependencies between the various aspects of the policy, planning and licensing framework that will require robust coordination.
70. The new planning arrangements aimed at streamlining the consenting regime for major energy infrastructure projects are broadly welcome. The proposed planning framework for new energy infrastructure in the Planning White Paper (“Planning for a Sustainable Future”) presents a significant opportunity to improve the development of both conventional and new, low carbon generating technologies and associated infrastructure. It will be important, however, that the new regime continues to provide for open and effective public consultation.
71. Between them the Planning and Energy White Papers address many of the issues where we have concerns. However, there are a number of other outstanding issues, primarily about timetabling and the status of existing and new applications for major energy projects in the transition period over the next two to three years. In particular, we are also of the view that the current regime for planning in the energy sector is capable of delivering many of the Government’s objectives for energy infrastructure, provided the regime is properly and proactively implemented and monitored in a timely manner.
72. It is critical that national policy statements are in place by the time investors come to consider applying for permission to construct new nuclear power stations. The role of the proposed infrastructure planning commission will be crucial. In any event it will be important for effective transitional arrangements to be put into place to deal with ongoing applications made before any new planning regime comes into force.

73. Finally, in addition to removing delays and uncertainty caused by inefficiencies in the present framework, another important facilitative action will be the commitment to a long-term carbon pricing mechanism. In order to promote diversity in the longer term we are seeking a robust policy framework which underpins a value for CO<sub>2</sub> emission reductions and strongly support continuation of the EU ETS into phase 3 and beyond.
74. Clarity on the EUETS framework over a period of at least 15 years is needed to align with investment cycles in large-scale generation technology. However, it is increasingly likely that Phase 3 of the EUETS will only run from 2013 to 2020 to align with EU greenhouse gas emission reduction and renewable energy targets. Consequently, it is essential that following the ongoing review of the Directive, it is revised to include a durable set of rules for determining both the scarcity of allowances and allocating any free allowances to existing and new entrant plant for phase 3 and subsequent phases. These rules should be harmonised across all Member States to ensure a level playing field across the EU. This will enable investors in low carbon technologies to make confident judgements regarding investments, such as new nuclear, whose viability may depend on a price for carbon. Continuity and consistency is vital to demonstrating a track record which gives confidence to investors in long-term assets.
75. For a more complete consideration of our views on the Justification and SSA/SEA processes, please see our comments on the “satellite” consultations set out in our separate response.

**RWE npower,  
October 2007**