

Hinkley Point C – Development Consent Order (DCO)

WSC/SDC/SCC



Topic paper to provide proof of evidence for Local Impact Report (LIR), Requirements & Obligations (R&O) and Statement of Common Ground (SoCG)

Waste:
Radioactive Waste – Main Site
Construction and Demolition Waste
Municipal and Commercial Waste

This document is in accordance with the relevant IPC Advice Note One: Local Impact Reports – March 2010

This document is without prejudice to ongoing consideration of the DCO application, further anticipated drafts of the DCO and related obligations, and remains subject to:

- (1) further review of application materials and representations, including submitted revisions and additions to the application;*
- (2) review of and interface with draft DCO articles, requirements and obligations; and*
- (3) review of further information that may be requested or received in relation to the DCO application.*

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1 Overview

- 1.1.1.1 This topic paper covers three main waste-related issues:
- at the main site for Hinkley Point C the on-site management and long-term interim storage of radioactive waste and spent fuel, the transfer of which is subject to the construction of a Geological Disposal Facility that is able to accept radioactive waste and spent fuel from Hinkley Point C;
 - at the main site and associated development sites the management, treatment and/or disposal of construction and demolition waste; and
 - at the main site and associated development sites the management, treatment and/or disposal of municipal and commercial waste.
- 1.1.1.2 This issue is of relevance to Somerset County Council (SCC) in its role as waste planning authority for Somerset (excluding Exmoor National Park). This role involves the production of waste-related policy (which includes radioactive waste), determining waste-related planning applications, monitoring of sites and enforcement.
- 1.1.1.3 This topic paper in particular provides the justification for Section 106 obligations / payments towards mitigation of the impact of long-term interim storage of radioactive waste and spent fuel at Hinkley Point C, and community impact mitigation measures (including informing the Community Impact Mitigation Fund) where mitigation is not possible, relating to both perceived risks and other negative impacts.

Table 1 Summary of Impacts

Impact description	Positive/ negative	Impact classification		
		1 Disagree with EDF	2 Additional	3 Agree with EDF
<p>1. There will be a significant adverse local impact arising from the presence of radioactive waste on-site and in particular the need for long-term interim storage of intermediate level waste (ILW) and spent fuel within HPC.</p> <p>This approach is a departure from existing arrangements at Hinkley Point.</p> <p>Mitigation and community impact packages have been agreed elsewhere in the UK and internationally linked with radioactive waste storage facilities.</p> <p>The long-term interim storage of ILW and spent fuel at HPC will have significant impacts:</p> <ul style="list-style-type: none"> - Perceived risks to the environment and public health affect the sense of wellbeing of local people. - Negative impacts on tourism and recreation in an already economically-disadvantaged area, whereby decisions taken by those who might visit or invest in the local area are negatively impacted by the inter-generational presence of radioactive waste, spent fuel and associated infrastructure on-site. 	Negative	Yes	Additional to site preparation principle established	
<p>2. Whilst it is acknowledged efforts are likely to be made to minimise the amount of LLW generated by HPC that is sent for disposal, the UK currently has insufficient highly engineered capacity to meet its future LLW disposal needs, with remaining permitted capacity for disposal at the LLWR facility near Drigg virtually gone (a relevant application is currently being considered in Cumbria). Any waste storage option that generates further significant impacts on the environment and local communities in Somerset is likely to require further appropriate mitigation and/or compensation.</p>		Subject to details and monitoring		

Table 1 (cont) Summary of Impacts

<p>3. To ensure that a variety of uses on the site may be possible in the long-term, the local community and related authorities need to be empowered to prepare for the eventual decommissioning of radioactive waste management facilities at HPC. Such "preparedness" goes beyond the nuts and bolts of decommissioning and needs advance planning to ensure a long-term positive outcome. In particular, there will a need to support forward planning to facilitate the delivery of future land uses consistent with policy objectives.</p>	Negative	Not yet agreed	Additional to site preparation principle established	
<p>4. The increased generation of different types of waste arisings in Somerset will place additional burden on waste management capacity in Somerset. If this increase in arisings places an additional material burden on the services provided by the Somerset Waste Partnership (SWP) – linked with the waste collection and/or disposal costs of the SWP - then it will be necessary for EDF to mitigate for this through an appropriate contribution.</p>	Potentially neutral	Agreed, but subject to monitoring		
<p>5. It is assumed that the market will be able to deliver construction and demolition (C&D) waste management needs for HPC without the need for additional capacity or intervention. Approximately 250,000 tonnes of inert material will be generated during construction and over 600,000 tonnes during decommissioning. The impact of managing this material, in particular (but not limited to) the impact of waste transport, needs to be carefully considered and mitigation or, as a last resort, compensation agreed. Meanwhile it is crucial to monitor construction and demolition waste generated by HPC and associated developments, market options for sustainable management of that waste, and ensure that any related applications are considered by the appropriate planning authority (the Waste Planning Authority)</p>		Agreed, but subject to monitoring		

The following are a preliminary summary of draft requirements and obligations that are required and does not include the full list of requirements and obligations that the Councils seek for inclusion in the DCO, nor the complete wording in each case

Table 2 Summary of obligations

Obligation	Impact link	Payable to	Single Payment	Timing of single payment	Annual payment	Phasing / stages of annual payment	Relationship to EDF
Payment into Community Impact Mitigation Fund	Adverse well being and socio-economic impacts and impacts on quality of life identified within the LIR	Fund managed jointly by WSC, SDC, SCC and EDF	Paid as part of Site preparation works	N/A	See CIM Fund	Annually during construction of the main HPC site and for as long as radioactive waste and spent fuel are stored on-site	Principle established by EDF for the site preparation works
Payment into "Decommissioning and Restoration Community Fund" (name to be confirmed)	The long-term impact of storage of radioactive waste and spent fuel at Hinkley Point on future land uses and site restoration,	Fund managed jointly by WSC, SDC, SCC and EDF	£3 million*	To be triggered on implementation of the decommissioning phase			

** There is an expectation that we would agree suitable indexation of these figures. It is expected that these obligations would apply to the proposed development, thereby any operator / promoter of the proposed development at Hinkley Point C would need to adhere to such obligations.*

Table 3 Summary of Requirements

The following is a preliminary summary of draft requirements that are required and does not include the full list of requirements the Councils suggest should be included in the DCO, nor the complete wording in each case.

Requirement	Supporting rationale / impact links
The proposed storage facilities for radioactive waste and spent fuel shall only receive radioactive waste and spent fuel from the Hinkley Point site. No radioactive waste or spent fuel from outside the licensed area at Hinkley Point shall be brought onto the site.	Waste Local Plan Policies W2, W3, W14 and W15; pre-submission Waste Core Strategy policy DM9; Structure Plan Policy STR1; West Somerset Local Plan BD/1 and BD/2; Sedgemoor District Council Core Strategy Policy MIP3; Hinkley Point SPD. Reason – to allow importation of radioactive waste from outside the Hinkley Point complex would be contrary to adopted waste planning policy, would not have a clear basis in national policy and would be likely to give rise to increased adverse local impacts by virtue of perception as a radioactive waste destination. Such a policy would be to the detriment of the local environment and local communities.
The storage facility for Intermediate Level Waste (ILW) and the storage facility for spent fuel shall be removed from the site within five years of a national facility being available to receive such material from Hinkley Point C.	Waste Local Plan Policies W2, W13, W14 and W15; pre-submission Waste Core Strategy policy DM9; Structure Plan Policy STR1 and 15; West Somerset Local Plan SP/5 and CO2. Reason – to ensure that radioactive waste is not permanently retained on the Hinkley Point C site.
The promoter shall submit applications for C&D waste management or disposal linked with Hinkley Point C and associated developments to the Waste Planning Authority.	Waste Local Plan Policies W9, W16, W20 and W21; Pre-submission Waste Core Strategy Policy WCS1; Site Waste Management Plans Regulations 2008; Hinkley Point C SPD, Sedgemoor Core Strategy Policy D. Reason – to ensure that relevant those officers best placed to consider waste planning matters review waste-related applications
The promoter shall prepare and submit quarterly monitoring reports to the enforcing authority in relation to construction and demolition waste arisings and their management at all sites covered by the Site Waste Management Plan(s).	Waste Local Plan Policies W2, W9, W16, W20 and W21; Pre-submission Waste Core Strategy Policy WCS1; Site Waste Management Plans Regulations 2008; Hinkley Point C SPD, Sedgemoor Core Strategy Policy D3 Reason – to support the diversion of C&D waste up the waste hierarchy and strengthen appropriate engagement between EDFE and the enforcing authority
Construction and demolition waste stored and processed at the Hinkley Point C site shall be limited to only construction and demolition waste generated at the Hinkley Point C. No construction and demolition waste from other sites shall be delivered to waste facilities at Hinkley Point C.	Waste Local Plan Policies W2, W3, W9, W13, W16; pre-submission Waste Core Strategy Policies WCS1, DM6; Structure Plan Policy 66; Reason – to manage inert waste where it arises, as far as practicable, and reduce the impact of waste on the county's local and strategic road network
Prior to the post operational decommissioning phase of each of the Associated Development Sites EDFE shall undertake a review of, and make proposals, for the management of wastes arising, taking account of any existing and anticipated new waste management facilities and techniques that could be used. The	Waste Local Plan Policies W2, W3, W9, W16, W20 and W21; Pre-submission Waste Core Strategy Policy WCS1; Site Waste Management Plans Regulations 2008; Hinkley Point C SPD, Sedgemoor Core Strategy Policy D. Reason – to ensure that proposals are informed by the

<p>review to be issued as a report and agreed in advance of demolition commencing.</p>	<p>latest information available regarding waste infrastructure and best practice, enabling EDFE to make best use of emerging local opportunities for waste recycling and other recovery.</p>
<p>Within a period agreed by the Waste Planning Authority prior to the decommissioning of Combwich Wharf Laydown, the promoter shall prepare and submit a revised site waste management plan and a transport assessment to the Waste Planning Authority, which specifically address waste management and waste transport associated with the decommissioning process. This could form part of a Post Operation Scheme i.e. be one part of the Post Operation Requirement.</p> <p>The assessments shall evaluate the options available for road and non-road based transportation of wastes from decommissioning of Combwich Wharf Laydown, thereby broadly demonstrating which destinations could be reached viably, based on best available information about demolition waste management capacity in the wider sub-region, and in line with adopted waste planning policy.</p>	<p>Waste Local Plan Policies W2, W3, W9, W13, W16; pre-submission Waste Core Strategy Policies WCS1, DM6;</p> <p>Reason – to encourage the use of alternatives to road transport for the significant quantity of waste generated by the decommissioning of Combwich Wharf Laydown</p>
<p>Soils shall be managed in line with the waste hierarchy, and through approved site waste management plans, material management plans and soils resource plans. No soils or other excavated material shall be stored or stockpiled permanently on-site unless this forms part of the approved strategy in the aforementioned plans.</p>	<p>Waste Local Plan Policies W9 and W20; Pre-submission Waste Core Strategy Policies WCS2, WCS3, WCS4, DM3; Site Waste Management Plans Regulations 2008; Hinkley Point C SPD</p> <p>Reason – to manage soils generated by the development appropriately during the lifetime of the project.</p>
<p>No [stage of the] authorised development shall commence until a written scheme [applicable to that stage,] to deal with the contamination of any land, including groundwater, within the Order limits which is likely to cause significant harm to persons or pollution of controlled waters or the environment has, after consultation with the relevant planning authority and the Environment Agency, been submitted to and approved by the IPC.</p> <p>The scheme shall include an investigation and assessment report, prepared by a specialist consultant approved by the relevant planning authority, to identify the extent of any contamination and the remedial measures to be taken to render the land fit for its intended purpose, together with a management plan which sets out long-term measures with respect to any contaminants remaining on the site.</p> <p>Remediation must be carried out in accordance with the approved scheme.</p>	<p>Waste Local Plan Policies W3; Pre-submission Waste Core Strategy Policies DM3, DM7</p> <p>Reason – to ensure appropriate remediation measures are undertaken.</p>
<p>Demolition wastes shall be managed through the approved remediation strategy and site waste management plans, which shall reflect the waste hierarchy.</p> <p>Hazardous demolition wastes which cannot be re-used on site without detrimental effects on the environment are to be delivered to an appropriate licensed treatment or disposal facility.</p>	<p>Waste Local Plan Policies W9; Pre-submission Waste Core Strategy Policies WCS1, WCS2, WCS3, WCS4, WCS5, DM1, DM3; Hinkley Point C SPD</p> <p>Reason – to ensure that the amount of demolition waste sent to landfill is minimised and that waste arisings are managed appropriately.</p>
<p>Adequate space and facilities – both within buildings and externally – that enables effective separation,</p>	<p>Waste Local Plan Policies W2, W5, W9, W17, W18, W20; Pre-submission Waste Core Strategy Policy WCS2</p>

temporary storage and collection of waste shall be provided prior to the relevant building or facility being brought into operation.	Reason – to support diversion of waste up the waste hierarchy.
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Targeted Priorities for the Fund

- 1.1.1.4 It is envisaged that a proportion of the Community Impact Mitigation Fund would be targeted toward the following initiatives, subject to their business cases and financial viability checks.
- 1) Mental health support infrastructure e.g. for those who would benefit from targeted support. Concerns about environmental health hazards can produce significant impacts on the mental, physical and emotional well being of the local population. (Reference should also be made to the Health topic paper and associated requirement for a Psychological Well-being Practitioner.)
 - 2) Waste management training and skills development (via relevant local training centres such as the skills college in Bridgwater and West Somerset Community College) targeting waste and construction sectors.
 - 3) A proportion of the Fund could be set aside for broader economic development, supporting the diversification of local economies into other sectors, in particular linked with SME innovation, research and development, higher value job creation and the proposed low carbon development cluster.
- 1.1.1.5 In addition, it is proposed that the decommissioning phase would trigger a further payment of £3 million, to empower the local community to prepare for eventual release of the site and help to ensure that suitable funds are available to evaluate, challenge and promote site end-uses. It is important to secure a genuine alternative to energy generation at the site in perpetuity, so that the land is not effectively sterilised from other uses.
- 1.1.1.6 It is expected that funding would be index-linked. The Decommissioning and Restoration Community Fund is considered separate from the Community Impact Mitigation (CIM) Fund.

2 Policy Summary

2.1 National Policy

Sustainable Communities Act 2007

- 2.1.1.1 The Sustainable Communities Act 2007 (SCA 2007) aims to promote the sustainability of local communities by encouraging the economic, social or environmental well-being of the authority's area, or part of its area.
- 2.1.1.2 The Act is primarily designed to strengthen the role of communities. It emanates from the principle that local people know best what needs to be done to promote the sustainability of their area, but that sometimes they need central government to act to enable them to do so. It also allows local authorities to ask central government to take action which they believe would better enable them to improve the economic, social or environmental well-being of their area.
- 2.1.1.3 The SCA 2007 reflects the similar powers that local authorities were granted by the Local Government Act of 2000.

Localism Act 2011

- 2.1.1.4 The Localism Act received Royal Assent on 15 November 2011, marking the passage into law a key item on the government's legislative agenda. The Localism Act contains a wide variety of measures, which will be introduced in a phase manner, in pursuit of the government's aim to decentralise power and pass control over public services to local communities.
- 2.1.1.5 Among the key rulings of the new act is the introduction of a general power of competence for councils, giving them the autonomy to make their own decisions and generate new policy initiatives on a local basis.
- 2.1.1.6 It also provides for the revocation of the Regional Strategies (revocation is subject to a SEA process), and brings with it greater scope for communities to engage with the planning system via neighbourhood planning, community right to build schemes and reform of the way local plans are made amongst other measures.

National Policy Statement for Energy (EN-1) July 2011

- 2.1.1.7 Paragraph 5.12.3 of EN-1 notes the potential impact *"of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure."* *".....This could alter the demand for services and facilities in the settlements nearest to the construction work (includingwaste)".*
- 2.1.1.8 Paragraph 5.12.6 of EN-1 states that *"... The IPC should have regard to the potential socio-economic impacts of new energy infrastructure*

identified by the applicant and from any other sources that the IPC considers to be both relevant and important to its decision...".

- 2.1.1.9 Paragraph 5.12.9 states that “ *The IPC should consider whether mitigation measures are necessary to mitigate any adverse socio-economic impacts of the development.....*”
- 2.1.1.10 EN-1 sets out information in relation to the waste hierarchy and provides that “... *Disposal of waste should only be considered where other waste management options are not available or where it is the best overall environmental outcome.*” (paragraph 5.14.3). The document details that specific considerations with regard to radioactive waste are set out in EN-6.

National Policy Statement for Nuclear Power Generation (EN-6) Volumes 1 and 2 July 2011

- 2.1.1.11 In relation to issues which will be considered by the IPC (now PINS) it is worthy of note that the IPC will not consider issues relating to the proposed geological waste disposal facility (GDF). Paragraph 2.11.4 details that “... *The question of whether effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations has been addressed by the Government and the IPC should not consider this further....*”.
- 2.1.1.12 The NPS does not provide clear guidance in relation to the length of time that the waste must be stored on site, only that a GDF is not programmed to be available for the disposal of higher activity wastes from new nuclear power stations until ‘around’ 2130. It states that in the absence of any proposals for further storage sites, the IPC should expect that waste will be on the site until the availability of a GDF (paragraph 2.11.5).
- 2.1.1.13 Annex B in Volume 2 of EN-6 suggests that “a UK facility could be operational for the disposal of legacy ILW by about 2040, with legacy High Level Waste/spent fuel emplacement beginning around 2075. Disposal of legacy waste is estimated to be completed by around 2130.” (Paragraph B 3.2).
- 2.1.1.14 However, Annex B provides that high level radioactive waste may have to stay on site for beyond 2130 in the event that a GDF has not been made available; “... *in the event that geological disposal facilities are not available to accept radioactive waste in accordance with the indicative timetable set out above, the Government is satisfied that interim storage will provide an extendable, safe and secure means of containing waste for as long as it takes to site and construct a GDF....*” (paragraph B.4.5) (emphasis added).

NDA Strategy (Effective from April 2011)

- 2.1.1.15 The Nuclear Decommissioning Authority (NDA) is a non-departmental public body created through the Energy Act 2004. The NDA is a strategic authority that owns 19 sites and the associated civil nuclear liabilities and assets of the public sector, previously under the control of UKAEA and BNFL.
- 2.1.1.16 Its latest strategy (effective from April 2011) distinguishes between:

- Higher activity waste (HAW) – includes High level waste, Intermediate level waste and a relatively small amount of Low level waste that is unsuitable for disposal in the current LLW facility. HAW also arises from the management of spent nuclear fuel.
- Low activity waste – (sub divided into operational and decommissioning waste). Operational LLW arises from routine monitoring and maintenance activities.

2.1.1.17 Key points from the current NDA strategy include:

- A commitment from the NDA to investigate opportunities to share waste management infrastructure across the (NDA) estate, and with other waste producers.
- An adherence to the waste hierarchy
- NDA are developing industry guidance for longer term storage HAW. The current approach is to immobilise waste and store it in purpose built facilities.
- The UK is expected to generate significantly more LLW than the planned disposal capacity at the LLWR. The LLWR is central to the NDA's strategy and NDA considers it important that it makes best use of this facility's remaining capacity.

Other national policy considerations

2.1.1.18 Government has published a new National Planning Policy Framework (NPPF) which replaces the majority of national policy and guidance presented in Planning Policy Guidance Notes (PPG) and Planning Policy Statements (PPS). However, Planning Policy Statement 10 (PPS10), which sets out the principles for making decisions on waste planning, remains unchanged at this time. Government intends to produce a new National Waste Management Plan for England (potentially by Spring 2013) as required under the revised Waste Framework Directive and it is expected that PPS10 will be revised for issue as an Appendix. Until that time, the current Waste Management Plans, which include the National Waste Strategy as complimented by the existing PPS10, will remain in force.

2.1.1.19 Government has reviewed national waste policy (June 2011) and the following text comes from the planning section, and outlines support for providing benefits locally for those most impacted by waste development.

“The principle that those most impacted should benefit most should operate across all scales from street to neighbourhood to local authority. How to achieve this should be part of an ongoing dialogue between communities, local authorities, waste management companies and developers. Other industries, for example wind generation, have addressed this issue through the development of industry protocols for providing community benefits in relation to infrastructure development, and we will explore with the waste management industry whether such approaches could be suitable for waste infrastructure”¹

¹ Government review of Waste Policy in England 2011, Defra, June 2011

2.2 Local Policy

Somerset & Exmoor National Park Joint Structure Plan 1991 – 2011 adopted April 2000 (saved planning policies)

2.2.1.1 Policy 65 – Provision of Waste Management Facilities

“... Provision of land should be made for the management of the forecast waste arising with due regard being had to cross county border waste management issues, in the period to 2011....”.

2.2.1.2 Policy 66 – Development of Waste Management Facilities

“... Provision of land for waste management facilities should be made, utilising previously developed land if appropriate, where:

- *it is as close as is practical to the source of waste;*
- *the site has satisfactory access and makes use of rail transport where practical;*
- *nuisance to neighbouring land uses is minimised;*
- *provision is made for reclamation and aftercare of the site;*
- *water courses and/or ground water are not adversely affected;*
- *the proposal respects the landscape character of the area, and*
- *proposals to generate energy are included where practical....”.*

Webblink: www.somerset.gov.uk/structureplan

The pre-submission Waste Core Strategy Development Plan Document for Somerset, October 2011, and its supporting evidence base (in particular Waste Topic Paper 6 on radioactive waste)

2.2.1.3 SCC is currently in the process of preparing a Minerals and Waste Local Development Framework (LDF) for the County which will provide planning policy guidelines on minerals and waste matters within the County up to 2028. The waste element will replace the existing Waste Local Plan which was adopted in February 2005. The pre-submission Waste Core Strategy (WCS) was published for consultation on 31st October 2011, consultation ending 6th January 2012 and follows Issues and Options consultations in 2007 and 2011. The Core Strategy sets out the vision, objectives and spatial strategy for all aspects of waste planning in Somerset, including radioactive waste, and how these will be delivered.

2.2.1.4 The theme of the Core Strategy reflects national policy articulated through the waste hierarchy which seeks to minimise waste at source, increase recycling and reuse followed by recovery, and above all to minimise the amount of waste sent for final disposal.

2.2.1.5 With regard to impacts on the environment and local communities the pre-submission Core Strategy refers to the Government Review of Waste Policy in England 2011, which notes in the context of waste facilities

The principle that those most impacted should benefit most should operate across all scales from street to neighbourhood to local authority.

How to achieve this should be part of an ongoing dialogue between communities, local authorities, waste management companies and developers. Other industries, for example wind generation, have addressed this issue through the development of industry protocols for providing community benefits in relation to infrastructure development, and we will explore with the waste management industry whether such approaches could be suitable for waste infrastructure. (Paragraph 264)

2.2.1.6 With regard to radioactive waste the pre-submission Waste Core Strategy contains policy DM9: *radioactive waste management*, which states:

Planning permission for the treatment and interim storage of radioactive waste generated at Hinkley Point may be granted within the licensed area subject to the applicant demonstrating that the proposed development:

- *Is consistent with national strategy for radioactive waste management; and*
- *Is located and designed to mitigate adverse impacts on the environment and local community or, as a last resort, proportionately compensate for or offset such impacts; and*
- *Is supported by robust economic and environmental assessments.*
- *Only radioactive waste generated at Hinkley Point shall be treated or stored at Hinkley Point.*

Weblink: www.somerset.gov.uk/mineralsandwaste

Waste Topic Paper 6: radioactive waste

2.2.1.7 A Topic Paper has been produced on the subject of Radioactive Waste (Topic Paper 6, July 2011) which sets out the key issues for radioactive waste management, particularly in relation to the HPC proposals.

Weblink: www.somerset.gov.uk/mineralsandwaste

The unsaved policies of the Somerset Waste Local Plan (2001 – 2011): material considerations

2.2.1.8 Policy W2 – The Proximity Principle:

“... Planning permission for waste development will only be granted where the application demonstrates that the site has been identified having given consideration to these factors in the following order of priority:

- 1) *Available, practical locations which minimise the distance to be travelled by the waste.*
- 2) *Locations which are within the limits of existing settlements.*
- 3) *Locations on previously developed land.*

Such an approach will not be expected where:

- 1) *It is a sewage treatment facility or,*

- 2) *It is a recycling facility in close proximity to a producer of a recyclable or recycled product or,*
- 3) *It is a composting facility which is in close proximity to a secured customer for the material produced, or it is an energy from waste plant in close proximity to a secured customer for the heat produced.....”.*

2.2.1.9 Policy W3 – Management of Environmental Effects:

“... Planning permission for waste management facilities will be granted provided that:

- *Adverse effects upon the environment, local amenity, adjoining land uses, access, public service provision and the transport network will be managed within limits acceptable to the planning authority; and,*
- *The proposals where appropriate include mitigation measures designed to minimise and to compensate for any loss of conservation value and local amenity; and,*
- *The proposals do not conflict with other policies of the development plan.....”.*

2.2.1.10 Policy W4 – Regional self-sufficiency:

“... Planning permission will be granted for new waste management facilities, including extensions to existing sites, provided that:

- *The facility is necessary to maintain the County contribution to regional self sufficiency; or,*
- *It is a household waste recycling facility and complies with policy W17.....”.*

2.2.1.11 Policy W13 – Site Restoration and Aftercare:

“.... Planning permission for waste facilities which do not constitute a permanent use of land, such as landfill or the temporary location of other waste operations will only be granted where:

- *The proposal includes restoration and aftercare measures which maximise the range of after uses available for the site; and*
- *The restoration measures will be implemented at the earliest practicable opportunity, either in a phased manner during operation or immediately following completion of the development; and*
- *The proposed after uses do not conflict with other policies of the development plan....”.*

2.2.1.12 Policy W14 – Nuclear Waste Disposal:

“.... Planning permission will not be granted for facilities for the disposal/permanent storage of nuclear waste in Somerset.....”.

2.2.1.13 Policy W15 – Nuclear Waste Treatment and Storage:

“... Planning permission for facilities for the treatment or temporary storage of nuclear waste will not be granted unless:

- *The waste arises solely from the operation or decommissioning of the plant at Hinkley Point; and*
- *Any treatment is confined to processes essential prior to transport or storage, and*
- *Temporary storage is confined to intermediate level waste with a specified end date for that storage; and*
- *There is no national facility for intermediate level waste storage or disposal.....”*

2.2.1.14 Policy W20 – Temporary Storage of Waste:

“... Planning permission for the temporary storage of waste material will be granted provided that:

- *Full justification is given for the need for the storage*
- *The permission will be valid for a limited period*

A limit is imposed on the amount of waste to be stored, in terms of volume or number of units....”.

Hinkley Point C Project Supplementary Planning Document (October 2011)

2.2.1.15 Box 1: Construction Phase Carbon Emissions Approach:

In respect of carbon management the SPD refers to waste as follows:

Waste: In line with national requirements, a site waste management plan (SWMP) should be provided for all sites to reduce carbon emissions associated with waste. This should be in place prior to construction works commencing and conform with best practice guidance.

2.2.1.16 Box 2: Whole Life legacy Planning Approach:

The SPD places an emphasis on legacy development in the context of reducing use of resources and the minimisation of construction and demolition waste. It notes that:

Examples of development that could be designed to allow for a permanent legacy use include accommodation for construction workers and related communal facilities.

Where temporary development is proposed and there is no opportunity for a permanent legacy use in line with current local planning policy, the Councils will expect the HPC project promoter to demonstrate how carbon emissions and waste relating to demolition, removal and land reinstatement will be minimised through consideration of whole life costing. Contributions towards a Low Carbon Infrastructure Fund will be

encouraged to compensate for the residual carbon emissions of demolition and reinstatement activities.

2.2.1.17 **Box 10: Principles for Worker Accommodation:**

The Councils will expect an overarching Worker Accommodation Strategy that proactively responds to the local policy framework and baseline conditions and clearly sets out a more integrated and sustainable approach to the provision of both the worker accommodation and supporting facilities.

The overarching Worker Accommodation Strategy and individual proposals for worker accommodation should include details of how they respond to the following criteria. Proposals for worker accommodation should:

- *Be designed to comply with Somerset Waste Partnerships' Design Requirements for residential properties.*

2.2.1.18 **Box 20: Approach to Nuclear Waste Storage**

The HPC project promoter should consider and evaluate all potential effects of the radioactive waste aspects of the HPC project and review the mitigation proposals and compensation that would be necessary to mitigate impacts on local communities. The HPC project promoter should seek to align strategies for the management of radioactive waste with any local guidance set out in the forthcoming Somerset Waste Core Strategy and ensure that:

- All practical measures are taken to minimise any adverse effects of the interim nuclear waste proposals in line with and appropriate mitigation measures are identified.
- That mitigation and compensation are agreed with the authorities that will address and mitigate against any perceived and actual detrimental effects of radioactive waste storage proposals.
- Appropriate measures are set out for the long term decommissioning and site restoration proposals for any interim waste storage facility and these are set out clearly in a DCO application.

2.2.1.19 **Box 18 (Pg 34) – Approach to Nuclear Waste Storage:**

“.... The HPC project promoter should consider and evaluate the impacts of the non-radioactive and radioactive waste aspects of the HPC project and review the mitigation proposals and compensation expected to address impacts on local communities. The HPC project promoter should ensure that:

- *All practical measures are taken to minimise any adverse effects of the interim nuclear waste proposals and appropriate mitigation measures are identified.*
- *That mitigation, compensation and benefits are agreed with the authorities that will outweigh any perceived and actual detrimental effects of radioactive waste storage proposals.*

- *The radioactive waste storage arrangements will keep waste safe and secure for 160 years or potentially longer and that there is compliance with national and international standards and best practices for environment, safety and security. Compliance should be made publicly available and compliance reports independently reviewed.*
- *Appropriate measures are set out for the long term decommissioning and site restoration proposals for any interim waste storage facility and these are set out clearly in a DCO application....”.*

2.2.1.20 **Planning Obligations and Community Benefits and Compensation Scheme** (Pg 80)

“... The Councils will expect a comprehensive scheme of economic, community/social, environmental and safety measures to mitigate and compensate for the new and increased levels of impact and harm associated with the Hinkley Point C project that takes account of the needs of the communities of the two Council areas as well as the needs and impacts of the Hinkley Point C workforce, including:

- *Identification of appropriate means for reducing, reusing, recycling or disposing of waste materials, including transportation of waste arising from construction activity where required.*
- *Measures and / or contributions to address any negative impacts on Bridgwater as a place to live, work, learn and community including public realm and town centre improvements; and contributions to meeting strategic regeneration objectives....”.*

2.2.1.21 **Dillington Visions** (Page 83 – 88 Hinkley Point C SPD). Developing a low carbon future (Pg 85)

“... To develop Somerset as a centre of excellence for low carbon use, with a strong business and educational reputation for low carbon and environmental technologies.

Priorities for the vision:

- *Developing low carbon skills training in Somerset and creating a ‘green collar’ workforce;*
- *Developing a national reputation for Somerset as a centre of excellence for low carbon energy and resource management;*
- *Developing a reputation as a centre of excellence in flood management and securing appropriate solutions for coastal flood management and the risk of tidal surge along the Somerset coast;*
- *Building upon Somerset’s existing reputation for excellence in waste management through securing appropriate and modern management solutions for waste from the nuclear new build that deliver environmental and economic benefits;*
- *Building upon EDF’s existing programmes to support homes and businesses to be low carbon;*
- *Investigating the use of waste heat from the nuclear new build development to support sustainable business development...”.*

Weblink

<http://www.sedgemoor.gov.uk/CHttpHandler.ashx?id=8082&p=0>

Sedgemoor Core Strategy, adopted October 2011

2.2.1.22 As with the West Somerset Local Plan, waste is not a district matter and therefore is not a focus for the District Core Strategy. However, policies of relevance are as follows:

2.2.1.23 Policy S3: Sustainable Development Principles

Development proposals will be supported where they contribute to meeting all of the relevant following objectives: (including)

- *Minimise the impact on natural resources, avoid pollution and incorporate the principles of sustainable construction to contribute to energy efficiency, renewable energy, waste reduction/recycling, the use of sustainably sourced materials, sustainable drainage, reduced water use, water quality and soil protection.*

2.2.1.24 Policy S4: Mitigating the Causes and Adapting to the Effects of Climate Change

Development should contribute to both mitigating and adapting to climate change and to meeting targets to reduce carbon dioxide emissions.

Development should mitigate the causes of climate change by contributing to all of the relevant following objectives:

- *Ensuring development minimises the use of natural resources by the use of sustainably sourced materials or the reuse and recycling of materials where appropriate, minimises greenhouse gas emissions, incorporates energy efficiency, helps to reduce waste and encourages modes of transport other than the car; and*
- *Utilising on site or decentralised renewable energy where feasible and viable and be consistent with the need to safeguard residential amenity, the natural, built and historic environment and the landscape, in line with standards set out in Policies D3: Sustainable Construction and Reducing Carbon Emissions in New Developments and D4: Renewable or Low Carbon Energy Generation.*

2.2.1.25 Policy MIP 3: Hinkley Point C: Compensation and Mitigation

Subject to any overriding national imperative, or specific operational requirement, the Council will seek to ensure, wherever possible, that the Hinkley Point C proposals avoid, minimise and mitigate (including, where appropriate, compensate for) impacts during the construction, operation, decommissioning, and restoration phases of the Hinkley Point C development, consistent with extant national policy advice.

The Council will encourage the promoter to engage effectively at the pre-application stage, with the Council and with local communities (including those at Bridgwater, Cannington, Combech and Burnham-on-Sea), consistent with the requirements of national policy and the Council's Statement of Community Involvement.

2.2.1.26 Policy D 3: Sustainable Construction and Reducing Carbon Emissions in New Development

The Council will encourage the use of sustainable construction techniques that promote the reuse and recycling of building materials, maximise opportunities for the recycling and composting of waste on all new development proposals (residential and non-residential) and reduce CO₂ emissions.

In all cases proposals for on-site renewable energy and low carbon generation will need to meet the requirements of Policy D4: Renewable or Low Carbon Energy Generation. Applications for all major development proposals (residential and non-residential) will be required to provide a statement demonstrating how sustainable construction principles have been incorporated, this should address demolition, construction and long term management. This will be expected to show how the proposal maximises its contribution towards the following objectives:

- *Sustainable sourcing of materials and their efficient and appropriate use, including their durability*
- *Minimising waste and maximising recycling;*
- *Incorporating Sustainable Drainage Systems wherever feasible;*
- *Minimising water consumption;*
- *Minimising energy consumption and improving energy performance;*
- *Minimising net greenhouse gas emissions of the proposed development;*
- *Maximising on-site low or zero carbon energy generation.*

Where the Council consider it likely that the proposal will result in significant adverse environmental effects during the construction phase a Construction Environmental Management Plan (CEMP) will be required.

Planning Performance Agreement (PPA)

2.2.1.27 Through the project management mechanisms established under the Planning Performance Agreement (between NNB Generation Company Ltd, West Somerset Council, Sedgemoor Council and Somerset County Council) a transparent framework has been put in place that enables the Councils to:

- evaluate and advise upon the technical and design merits of the Proposals, including environmental, transport, social and economic impacts and benefits, to advise on the management of impacts and explore the potential for planning mitigation to address these impacts;
- evaluate and provide pre-application advice about how the Proposals contribute and deliver regional, sub-regional and local economic, planning and community strategies, priorities and specific issues in the area. In particular to provide advice:
 - (A) in relation to how the development may enable the community to access the opportunities presented through direct and indirect investment, via a local labour agreement and wider socio-

- economic strategy together with arrangements to monitor socio-economic impacts and change;
- (B) on skills and workforce development via up-skilling and retraining to meet business needs, and be pro-active in addressing these through work with appropriate local partners;
 - (C) on the potential for specifically addressing local deprivation and targeting hard to reach groups, so as to stimulate engagement and enhance inclusion;
 - (D) on a community cohesion and safety strategy which ensures that the impacts of transitory labour are managed effectively;
 - (E) on the potential for the development to assist in tackling infrastructure deficits and meeting local needs, via a clear prioritised investment plan linked to wider local development frameworks, economic, environmental and regeneration strategies;
 - (F) on the potential for the development to contribute to wider community and environmental benefit in the affected locality, creating a positive legacy that contributes to longer term sustainability, economic restructuring, environmental quality and place shaping;
 - (G) on the transport implications of the proposal, including sustainable transport;
- ensure that the Proposals are capable of evaluation against the Government performance framework and indicator set and local targets, and are monitored.

West Somerset District Local Plan, adopted April 2006

2.2.1.28 The West Somerset District Local Plan was adopted in April 2006 and automatically saved for three years post-adoption under the provisions of the Planning and Compulsory Purchase Act 2004 and associated Regulations. Towards the end of the three year period, West Somerset Council wrote to the Secretary of State to extend the life of the saved policies. The Secretary of State issued a Direction letter in April 2009 indicating those Local Plan policies which had been saved.

2.2.1.29 The WSDLP provides the local policy context for those elements of the HPC proposals that fall within the administrative area of West Somerset Council.

2.2.1.30 Policies of relevance to this topic include the following:

Policy PO/1: Planning Obligations

“... The Local Planning Authority in determining planning applications for significant forms of residential, commercial or industrial development may seek to negotiate appropriate planning obligations with developers to provide or contribute to infrastructure or community facilities directly related to the proposed development and commensurate with the development proposals...”

Weblink: <http://www.westsomersetonline.gov.uk/Planning---Building/Planning-Policy/Saved-Local-Plan-2006>

West Somerset Community Strategy

- 2.2.1.31 This Strategy sets out the objective to develop and maintain a thriving sense of community in West Somerset by:
- providing accessibility to services for everyone;
 - promoting community cohesion;
 - reducing perceptions that result in the fear of crime;
 - ensuring that facilities and services to promote healthy lifestyles are accessible; and
 - promoting exercise for all people using the natural environment.

West Somerset Council Corporate Plan 2010-2011

- 2.2.1.32 This Plan includes an objective which seeks to ensure adequate mitigation and compensation measures are in place to limit the adverse impacts during the construction and future operation of Hinkley Point, including the long-term storage of nuclear waste.

Emerging Memorandum of Understanding for the Proposed Development of Hinkley Point C and its proposed associated developments

- 2.2.1.33 The emerging MoU is informed by the CL:AIRE principles.
- 2.2.1.34 CL:AIRE (Contaminated Land: Applications in Real Environment)
Definition of Waste: Development Industry Code of Practice. Version 2:
March 2011

Weblink

http://www.claire.co.uk/index.php?option=com_phocadownload&view=file&id=212:initiatives&Itemid=82

3 The impacts of radioactive waste management

3.1 Introduction

3.1.1.1 The *Environmental Permitting (England and Wales) Regulations 2010* define radioactive waste as waste which consists wholly or partly of:

- a) a substance or article which, if it were not waste, would be radioactive material, or
- b) a substance or article which has been contaminated in the course of production, keeping or use of radioactive material, or by contact with or proximity to other waste falling within sub-paragraph (a) or this sub paragraph.

3.1.1.2 From this initial definition, a number of sub categories are used in practice, comprising:

- **High level (or heat-generating) waste (HLW):** comprising a highly radioactive liquid (nitric acid) generated as a by-product from the reprocessing of spent nuclear fuel, and accounting for approximately 0.1% of the radioactive waste produced in the UK (albeit representing 95% of the total radioactivity of all nuclear waste).
- **Intermediate level waste (ILW):** this has lower levels of radioactivity than HLW although it is sufficiently radioactive to require shielding and containment. Consisting of solid materials such as reactor components or wet wastes and sludges, it arises mainly from the reprocessing of spent fuel and from general operations and maintenance at nuclear power sites, and accounts for approximately 10% of the radioactive waste produced in the UK.
- **Low level waste (LLW):** this is generally made up of everyday materials such as plastics, glass, metals and paper which have come into contact with radioactive liquids or powders and accounts for about 90% of solid radioactive waste in the UK (by volume) although it contains less than 0.1% of the total radioactivity.
 - A sub-section of LLW is **Very Low Level Waste**. As its name suggests, this type of waste contains very low levels of radioactivity. Certain waste management facilities can accept this waste type alongside non-radioactive wastes under a special permit issued by the Environment Agency. According to the Environment Agency, most of the low level waste that could be sent to landfill consists of rubble and soil from decommissioning of nuclear power plants and the quantities permitted for disposal would be limited.

3.2 Regulation

- 3.2.1.1 The disposal of radioactive wastes from nuclear and non-nuclear sites is regulated in the UK by the *Environmental Permitting (England and Wales) Regulations 2010*. These regulations have superseded the former *Radioactive Substances Act 1993*.
- 3.2.1.2 The safety of nuclear installations in the UK is regulated by a new, sector-specific regulator, the Office for Nuclear Regulation (ONR) launched on 1st April 2011. This replaces the previous system whereby the Nuclear Directorate of the Health and Safety Executive (HSE) was responsible for regulating nuclear safety.

3.3 Local planning authority remit in respect of waste issues

- 3.3.1.1 As noted at the start of this topic paper, Somerset County Council is the Waste Planning Authority for Somerset (excluding Exmoor National Park).
- 3.3.1.2 Focusing on spatial planning, the County Council has an obligation to consider the long-term waste management needs of the county via relevant planning policy. This includes radioactive waste. Consequently the pre-submission Waste Core Strategy (published in October 2011) includes coverage of radioactive waste matters.
- 3.3.1.3 Both in its development management planning role and in making the strategic planning response to the HPC proposals, the County Council is concerned to ensure that the tangible and perceived adverse impacts of storing different types of radioactive material are fully assessed and understood, and that appropriate steps are taken to mitigate and/or compensate for such impacts.
- 3.3.1.4 West Somerset Council and Sedgemoor District Council represent those communities most directly impacted by the proposed development and are the relevant Local Planning Authorities for non-waste development.

3.4 Summary of Hinkley Point C (HPC) Proposals

- 3.4.1.1 The HPC proposals comprise two European Pressurised Water reactors (EPR). The proposed arrangements for LLW, ILW and spent fuel have been published by EDF in their DCO application.
- 3.4.1.2 EDFE's proposals for the management of radioactive wastes at HPC are designed to align with the Government's 'Waste Base Case' as set out in its December 2010 'Consultation on Funded Decommissioning Guidance for New Nuclear Power Stations'. The approach also accords with national policy set out within NPS EN-6 for Nuclear Power Generation, July 2011 and the Nuclear Decommissioning Authority (NDA) Strategy, effective from April 2011.

3.5 Disposal of higher activity wastes

- 3.5.1.1 For over three decades, the UK has struggled to successfully find a solution to the problem of long-term radioactive waste management. Central government is now reliant on a volunteerism approach for disposal of higher activity radioactive wastes and Copeland Borough, Allerdale Borough and Cumbria County Councils have expressed an interest with a view to potential participation in the siting process for a Geological Disposal Facility (GDF).
- 3.5.1.2 According to current assumptions, any such GDF could be operational for the disposal of legacy ILW by circa 2040, with legacy HLW / spent fuel emplacement potentially beginning circa 2075. There is significant uncertainty about these timings and about whether, and if so when, any such facility, once operational, could accept waste generated by new build reactors such as HPC.
- 3.5.1.3 The Government's aspiration is to find a single site for a GDF that would enable legacy and new build higher activity wastes to be disposed of in the same facility. However, this aspiration is subject to a range of risks and uncertainties. In particular, the capacity of suitable host rock at a preferred site may not be sufficient for both legacy and new build higher activity wastes², or volunteer communities may not agree to the disposal of new build higher activity wastes³.
- 3.5.1.4 If the Government's aspiration to dispose of legacy and new build wastes in the same GDF is met, current assumptions are that new build radioactive waste disposal at a GDF will not begin until circa 2130, over 50 years after end of electricity generation at the proposed HPC station. It is acknowledged that central government wishes to pursue an accelerated timescale; but there is no guarantee that either the current or accelerated timelines will be met⁴.

² The size requirements of the underground part of a GDF could be affected significantly by higher volumes of wastes. For example, a 10 GW(e) new build programme could increase the footprint of the underground facilities from 6 km² to 9km² for high strength rock and from 9km² to 20km² for lower strength sedimentary rock. There would be a proportionate increase in the construction and backfill materials required and the spoil generated. These figures are quoted in 'Geological disposal of radioactive waste in West Cumbria?' West Cumbria MRWS Partnership, Public Consultation Document, November 2011, p85.

³ The West Cumbria MRWS Partnership has adopted a set of 'inventory principles' for agreement with Government about how inventory issues will be handled if a decision is taken to enter the siting process. These include a commitment to negotiate a process that be used to change the inventory, covering the circumstances under which local authority decision makers should have a veto on changes to the inventory. In response, the Government acknowledges that it expects an inventory change process to be developed and that this might address "the circumstances under which DMBs (local decision makers) may feel the impacts of any change to the inventory to be unacceptable". See 'Geological disposal of radioactive waste in West Cumbria?' West Cumbria MRWS Partnership, Public Consultation Document, November 2011, p81.

⁴ See the paper on the NDA website at: [Review of timescales for geological disposal of higher activity radioactive waste](#)

- 3.5.1.5 If the Government's aspiration is not met and a second GDF is required for new build higher activity wastes, this would add significantly to the uncertainties around the timescales for disposal of such wastes⁵.
- 3.5.1.6 Long-term interim storage at the HPC site prior to disposal in a GDF is therefore an important part of the applicant's approach to the management of higher activity wastes.

3.6 Plans for long-term interim storage at HPC

- 3.6.1.1 EDF proposes two long-term interim stores at the HPC site:
- the ILW Interim Storage Facility (ILW ISF) would store packages of conditioned ILW ; and
 - the Interim Spent Fuel Store (ISFS) would wet store spent fuel.
- 3.6.1.2 EDF has proposed that ILW generated by HPC is retrieved, conditioned and packaged on-site on a campaign basis throughout the operation of HPC. Pre-cast concrete casks will be used for the packaging and the ILW will be conditioned either in cement or epoxy resin. This will result in a passively safe package ready for long-term interim storage. These packages would be stored in an on-site ILW store for the duration of operations and beyond.
- 3.6.1.3 The process for on-site storage of spent fuel comprises a period of initial cooling within the reactor fuel pond (10 years), following which the spent fuel assemblies would be transferred to the separate on-site spent fuel Interim Storage Facility (ISFS).

⁵ The West Cumbria MRWS Partnership states that "We are aware that the Government has said that more than one repository is possible, but also that this would depend on the inventory and the eventual location or locations under discussion. Because of this, we have had no detailed discussions on this issue. We note that committing to one repository does not automatically commit an area to having a second one", 'Geological disposal of radioactive waste in West Cumbria?' Public Consultation Document, November 2011, p76.

- 3.6.1.4 EDFE anticipates that the ILWSF would be emptied of waste and decommissioned within 20 years of end of generation, although its lifespan is capable of extension if necessary through refurbishment or replacement of equipment and structures. It explains that a reactor that begins generation in 2018, with a 60 year generating life, could have all ILW packaged and ready for transfer to a GDF by around 2098 (which is significantly earlier than the currently anticipated start date for disposal of new build wastes, 2130). EDFE states that the current scheduling for transfer of ILW to the GDF has not been optimised for new build waste, but that optimisation should allow earlier disposal of new build ILW. For the purposes of decommissioning planning, EDFE assumes that GDF scheduling can be optimised to allow transfer of ILW during the main site decommissioning phase, but that if optimisation requires a further period of interim storage at the HPC site, it is possible that the ILWSF may need refurbishment.
- 3.6.1.5 EDFE explain that the ISFS would be designed so as to be capable of operating independently of other parts of the site in recognition of the need, under current assumptions, for its lifetime to extend beyond the decommissioning of other facilities on site.
- 3.6.1.6 In summary, there is considerable uncertainty around the duration of long-term interim storage in the proposed ILWSF and ISFS. In optimistic scenarios, these stores might 'only' be required for a few tens of years beyond end of generation (requiring acceleration of the GDF programme and optimisation of disposal schedules for new build wastes). On current 'base case' assumptions, the stores would be required for at least 50 years beyond end of generation (with the start of disposal in 2130). On pessimistic scenarios, the stores could be required for even longer (if the GDF programme is delayed significantly or if a second GDF is required for new build higher activity wastes).
- 3.6.1.7 Regardless of which scenario is ultimately played out, it is clear that the provision of interim storage facilities on the HPC site would represent a long-term (inter-generational) commitment. This approach – particularly with regard to spent fuel management – represents the most significant change to current arrangements at Hinkley Point.

3.7 The Method of Spent Fuel Storage

- 3.7.1.1 In addition to the duration of spent fuel storage, the method of spent fuel storage is pertinent to concerns about perceptions of risk and negative impacts.
- 3.7.1.2 In particular, EDF is proposing the long-term "wet storage" of spent fuel at HPC rather than "dry storage". This is of concern given the recently expressed views of the Royal Society in their October 2011 report "Fuel Cycle Stewardship in a Nuclear Renaissance". The Royal Society points out that wet storage requires robust arrangements for continuous back-up cooling and on site power in order to guarantee safety and security over the long term.
In contrast, it argues that the dry storage only needs simple, passive cooling systems, making it a safer long term option. It adds that unlike wet storage, dry storage does not necessarily rely on the intervention of

an operator or mechanical control to ensure safety. It also points out that dry storage casks are highly robust to various attack scenarios.

- 3.7.1.3 Overall, the Royal Society concludes that when planning interim spent fuel storage: *"Whenever possible, interim storage under dry conditions should be adopted to enhance nuclear safety and security"*.

3.8 End state and end uses of the site

- 3.8.1.1 According to the Development Consent Order application for Hinkley Point C submitted by EDF: *"The Final Stage of Decommissioning would be the removal of the nuclear licensing requirements from the site. Following site clearance and de-licensing, all areas of the site would be acceptable for access accessible by members of the general public."*
- 3.8.1.2 It is noted that this end state aims to ensure that the site would be accessible by members of the general public. However, at this stage it is far from clear that the site would attract either developers or recreational who would consider the site as suitable for uses other than those linked with the energy industry.

3.9 Management of LLW generated by HPC

- 3.9.1.1 EDF has proposed that the low level waste (LLW) generated through operations and decommissioning is, where necessary, disposed of as soon as is reasonably practicable, following treatment to minimise volume and appropriate conditioning or packaging. The LLW is expected to be managed via one of the following main routes depending on the radioactivity level of the waste and its physical and chemical properties:
- off-site treatment of metals, ultimately for recycling, via commercially available routes subject to meeting the relevant Conditions for Acceptance (CfA);
 - off-site incineration of combustible wastes using commercially available routes subject to meeting relevant CfA (no on-site incineration of wastes);
 - use of appropriate authorised disposal facility for exempt and VLLW disposal (notably for soil, rubble and aggregates) where no reuse or recycling options are viable, subject to meeting relevant CfA;
 - transfer of suitable LLW for super-compaction prior to disposal at the Low Level Waste Repository (LLWR) to minimise disposal volume; and
 - disposal of LLW directly to LLWR would be utilised only where the above alternatives are not practicable.
- 3.9.1.2 Whilst the approach proposed by EDF is seen to accord with national Government policy and strategy – in particular the UK Strategy for the Management of Solid Low Level Radioactive Waste from the Nuclear

Industry (August 2010) - and the Waste Hierarchy⁶ it is important to note that the majority of the UK's low level waste (LLW) has to date been sent to the LLW repository near Drigg, Cumbria, operated by LLW Repository under contract to the Nuclear Decommissioning Authority. And, in this regard, it should be noted that:

- a) the Vault 9 facility at the LLW Repository near Drigg does not currently have planning permission for disposal of LLW; and
- b) the remaining disposal capacity at Vault 8 for LLW is very limited indeed and needs careful management.

3.9.1.3 A planning application has been submitted for an expansion of the LLWR site near Drigg to allow for the development of additional disposal capacity; however, there is no guarantee that this will be permitted or have capacity for disposal of LLW generated in Somerset where alternatives are not practicable. The current permitted capacity of the facility near Drigg is well below the forecast volume of LLW nationally that must be dealt with in the future. Consequently it is appropriate to take a precautionary approach to the management of LLW generated at HPC, in particular linked with disposal.

3.9.1.4 The County Council notes the proposed approach regarding LLW and believes it to align with government policy. However, if plans change regarding LLW generated at HPC in such a way that would substantially alter the nature of impacts locally, then it will be necessary for EDF to mitigate and/or compensate for this through an appropriate contribution.

3.10 Evidence of impacts

3.10.1.1 A strategy reliant on on-site long-term storage of spent fuel is a significant departure from existing arrangements at Hinkley Point, as is the duration of proposed storage of ILW. The cumulative impact of EDFE's proposals places a significant additional burden on the local community in Somerset. The long-term presence of radioactive waste, spent fuel and associated infrastructure generates perceived risks and other negative impacts, which will require mitigation and, if necessary, compensation.

3.10.1.2 It is established planning law (e.g. Newport⁷, Trevett⁸, West Midlands Probation Service⁹, and Smith¹⁰) that perceived fears are material planning considerations, the impacts of which can be properly mitigated pursuant to Section 106 of the Town and Country Planning Act 1990, subject to the restrictions and guidance applicable thereto.

⁶ Revised waste hierarchy (updated following changes to Planning Policy Statement 10) March 2011

⁷ Newport BC v Secretary of State for Wales [1998] Env. L.R

⁸ Trevett v Secretary of State for Transport, Local Government and the Regions [2002] EWHC 2696

⁹ West Midlands Probation Committee v Secretary of State for Environment, Transport and the Regions (1998) 10 admin.L.R. 297

¹⁰ Smith v First Secretary of State [2005] EWCA Civ 859

- 3.10.1.3 Impacts identified linked with the management of radioactive waste and spent fuel generated at HPC include, but are not limited to:
- Perceived risks associated with the long-term storage of ILW and spent fuel. Perceived risks to the environment and public health affect the sense of wellbeing of local people.
 - Negative impacts on tourism and recreation in an already economically-disadvantaged area, whereby decisions taken by those who might visit or invest in the local area are negatively impacted by the presence of different levels of radioactive waste and associated infrastructure on-site.
- 3.10.1.4 Furthermore there are broader impacts identified linked with the long-term use of the site. What will be the impact on the land after the nuclear power facility has closed and options are considered for the site post-decommissioning? "Preparedness" goes beyond the nuts and bolts of decommissioning a nuclear power site and needs advance planning to ensure a long-term positive outcome. This links with removal of ILW and spent fuel, removal of associated structures linked with on-site storage of radioactive material, and more broadly planning of the site for future uses. Plans need to be put in place for mitigating the residual impacts on the site and empower the local community to prepare for the eventual decommissioning of radioactive waste management facilities at HPC.

EDFE's Environmental Impact Assessment (EIA)

- 3.10.1.5 The Environmental Statement (ES) submitted as part of the DCO application (October 2011) provides a description of the measures to manage radioactive waste (Volume 2, Chapter 7). The ES reports the findings of the Environmental Impact Assessment (EIA). The chapter on radioactive waste acknowledges that measures are needed to prevent, reduce and off-set any potential adverse impacts that are identified to be of significance.
- 3.10.1.6 The Environmental Statement (Volume 2, Chapter 22) includes a radiological assessment of the direct effects of radioactive discharges for soils, groundwater and human health, as well as biodiversity.
- 3.10.1.7 The EIA does not provide a clear explanation of where or how other impacts are considered, especially on socio-economics and amenity and recreation.

EDFE's Health Impact Assessment (HIA)

- 3.10.1.8 The DCO application is accompanied by a Health Impact Assessment (HIA), which addresses a range of issues including potential exposure to radiation. From the review of the HIA, it is encouraging to see some recognition of the broader quality of life issues that will arise as a result of new nuclear development, including the preparation of a Health Action Plan; however, the Councils consider that the work does not sufficiently address the broader quality of life impact issues which will arise as a result of a new nuclear development (including on-site storage of radioactive waste and spent fuel). These include anxiety about potential health effects and other issues associated with how the community perceive their environment. The Councils recognise that these issues may only be assessed at a qualitative level; nevertheless these types of health issue are potentially significant and need to be identified and an appropriate steps taken to mitigate and/or compensate for such impacts.

Summary of evidence

- 3.10.1.9 A variety of research has been undertaken by different people and organisations, nationally and internationally, on the impacts of radioactive waste and radioactive waste management.
- 3.10.1.10 The following boxes of information outline the findings relevant to perceptions of risk and their impacts:
- Box 1 introduces the basis of perceptions of risk
 - Box 2 includes written evidence on risk perception and energy infrastructure
 - Box 3 focuses on a review of case studies on risk perceptions and the impact on well-being
 - Box 4 focuses on research on risk perceptions and impacts in Cumbria
 - Box 5 outlines research on tourism in Somerset
 - Box 6 focuses on the results of quantitative surveys of risk perceptions
 - Box 7 focuses on the findings from a series of interviews and surveys with residents in three case study areas, including Hinkley Point.
- 3.10.1.11 Appendix 1 summarises some of this research in greater detail. This body of research continues to grow, so the information presented here should not be considered comprehensive.
- 3.10.1.12 Boxes 8, 9 and 10 provide information on long-term uses for nuclear sites, linked with planning for after the facilities are decommissioned and sites restored.

Box 1: Introducing the basis of perceptions of risk

- 3.10.1.13 The basis of perceptions of risk has been researched extensively in a series of psychometric studies that evaluate hazards, activities or risk sources according to a discrete number of qualitative factors. It has been argued that a consistent pattern of risk perceptions has been found in a good cross section of European countries¹¹.
- 3.10.1.14 According to the research, perceptions of risk and levels of worry increase when the following factors are present:
- to be involuntary (e.g. exposure to pollution) rather than voluntary (e.g. dangerous sports or smoking)
 - as inequitably distributed (some benefit while others suffer the consequences)
 - as inescapable by taking personal precautions
 - to arise from an unfamiliar or novel source
 - to result from man-made, rather than natural sources
 - to cause hidden and irreversible damage, e.g. through onset of illness many years after exposure
 - to pose some particular danger to small children or pregnant women or more generally to future generations
 - to threaten a form of death (or illness/injury) arousing particular dread
 - to damage identifiable rather than anonymous victims
 - to be poorly understood by science
 - as subject to contradictory statements from responsible sources (or, even worse, from the same source)
- 3.10.1.15 Researchers stress that the greater the number of risk perception factors present for a particular issue, the greater the perceived risk and sense of heightened concern.
- 3.10.1.16 The concept of 'stigma' has also been used to describe risk issues that are socially unwelcome and unacceptable. The following are the key features of stigma:
- the source of the stigma is a hazard with high perceived risk and associated dread factors;
 - a standard of what is right and natural has been violated or overturned;
 - the effects are unfairly distributed geographically and socially;
 - the magnitude and persistence of the unwanted impacts over time could be long term or even irreversible.

¹¹ Kemp R et al, 'Communicating understanding of contaminated land risks: literature and legislation review', SNIFFER project, 2009.

3.10.1.17 It has been known for many years that radioactive waste rates highly in terms of perceived risk and that continues to be the case today. The extent to which this will apply to the long-term interim storage of ILW and spent fuel at the proposed HPC station will depend on the number of risk perception factors that apply.

Box 2: Written evidence on "Risk perception and energy infrastructure"

3.10.1.18 Written evidence has been gathered and accepted by the UK Science & Technology Committee for its inquiry into risk assessment, communication, perception and tolerability in relation to energy infrastructure, focusing on nuclear power. Quotes from selected representations are included below:

"The key factors influencing public risk perception of energy infrastructure facilities and projects are fear and dread"

Royal Society of Chemistry

"Most people remain unconvinced that living next to a nuclear power station or a deep repository for radioactive waste (especially for high-level waste) is safe. Anything "nuclear" is seen as dangerous, polluting and unpredictable"

British Geological Society

"...there seems little doubt that the nuclear label, or 'brand' as we have come to think about it, continues to exert a powerful negative influence on the public imagination, certainly in the UK and Spain, and very likely in many countries around the world"

Professor Tom Horlick-Jones, Chair in sociology of risk, Cardiff University

Box 3: Risk perceptions and impacts on well-being

- 3.10.1.19 Following a review of the literature and ten case studies, researchers from the Centre for Public Health at Liverpool John Moores University and the North West Office of the Health Protection Agency¹², have concluded that it is now well established that public concern over an environmental health hazard can produce significant effects on the mental, physical and emotional wellbeing of the local population.. They also recommend that regulating agencies and health practitioners should devote more attention to public risk perception and its manifest link with health and well-being.
- 3.10.1.20 They point out, however, that it is often difficult: to determine whether certain symptoms are directly due to an environmental hazard or due to the perception of its risk; to distinguish between real and imaginary symptoms; and to understand to what extent the social and environmental context plays a significant role in symptoms. Furthermore, it is only recently that studies have begun to investigate the 'real' effects of concerns about hazards and stress on human health.
- 3.10.1.21 Nonetheless, the researchers conclude that the less acceptable the hazard, the more likely that its perception may induce health impacts. They point out that frequent concerns focus on possible pollution origins (such as landfills, incinerators, and industrial sites) and on potential outcomes (mainly cancer), regardless of any plausible cause-effect relationship.
- 3.10.1.22 The researchers point to the necessity for more detailed investigation of local concerns and suggest that consideration should be given to the inclusion of the estimation of community anxiety and stress as part of every risk or impact assessment of proposed plans that involve a potential environmental hazard, even when the physical health risks may be negligible.

¹² Luria P, et al, 'Health Risk Perceptions and Environmental Problems: Findings from 10 Case Studies in the North West of England', May 2009.

Box 4: Research on risk perceptions and impacts in Cumbria

- 3.10.1.23 In a report commissioned by Cumbria Tourism¹³, the West Coast as a label is stated as having some issues for visitors and non-visitors. "*The first thing that comes to mind for some is Sellafield and the nuclear industry rather than a destination for a lovely visit to a Lake District-like location*".
- 3.10.1.24 In another report¹⁴ also commissioned for Cumbria Tourism, focusing on understanding why people choose not to visit the West Coast of Cumbria, the results stated that "*18% of those who would not consider a visit state Sellafield nuclear power station as a factor*". Just over a third of respondents associated with the West Coast with the power station "*so it is playing a role in discouraging some people from visiting*".
- 3.10.1.25 Research published on the impact of a nuclear waste repository facility on perceptions of West Cumbria¹⁵ concluded that the opinion of the general population is divided, but agree on one main factor: employment. 77% of all respondents felt that the biggest advantage of the GDF was its ability to create employment in the local economy. When asked for a single largest disadvantage, some stated that impact on the environment (18%), some the effect on tourism (16%) and some the health implications (14%). In the rural community, opinion was more negative:
- There is a view that there is a general lack of information about the GDF or the MRWS process
 - General concerns about the impact on the landscape and on property and land prices. Particular concern in relation to leaks similar to the alleged contamination at Sellafield.
 - Real and widespread fear that the jobs and investment created will flow out of the area and not be channelled to local people.
 - There is a significant concern that other, non-energy industries might suffer due to the ongoing link to the nuclear industry.
- 3.10.1.26 Focusing on visitor opinion, 36% of visitors feel that Cumbria would be negatively impacted by a GDF, whilst 42% feel that West Cumbria would be a worse place to visit. 4 in 10 visitors felt that the GDF would impact on the number of tourists, with 36% believing that there would be reduced tourism spend within the county.

¹³ Strategic Marketing on behalf of Cumbria Tourism, *Awareness and Perceptions Quantitative Research*, February 2009

¹⁴ Arkenford Ltd on behalf of Cumbria Tourism, *Cumbria Non Visitor Research*, June 2007

¹⁵ GVA, *Impact of a Nuclear Waste Repository Facility on Perceptions of West Cumbria*, Final Draft Report, Managing Radioactive Waste Safely Partnership, 14 April 2011

Box 5: Research on tourism in Somerset

3.10.1.27 Research undertaken by South West Tourism (now superseded by The South West Tourism Alliance) seeks to estimate the value of tourism to each district within the South West. Within West Somerset, it is estimated that¹⁶:

- £59,030,000 spend by staying visitors
- 1,189,000 day visits
- £47,998,823 spend by day visitors
- 2,399 jobs related to tourism spending
- 15% of employment is supported by tourism.

3.10.1.28 From the above figures, it is clear that tourism is a major factor in the economy of West Somerset. The district hosts a multitude of tourist related accommodation, including Butlins, which caters year round for tourists, and also has diversified into niche music events, extending the traditional season through the autumn and winter months.

3.10.1.29 The Somerset Economic Assessment¹⁷ details the main events which take place in the county, and details a map showing that within West Somerset more than 40% of the workforce are employed in distribution, hotels and restaurants.

3.10.1.30 The economic assessment emphasises that West Somerset has a particular dependence on tourism, attributed to the map (see Figure 1 on the next page), although it also acknowledges that visitor spend in the district is relatively low value overall. The economic assessment notes that Somerset faces stiff competition from nearby areas such as Devon and Dorset

3.10.1.31 Visit Somerset, the official tourism website for Somerset describes the county as a destination of dramatic coastline, seaside resorts, epic English countryside and historic places. The county needs to maintain being recognised for these facets, and well known features such as Glastonbury Tor, and the Levels and not be defined in tourist terms by the Hinkley facility.

3.10.1.32 The Somerset Coast has been chosen as the location for one of the first stretches of the England Coast Path, from Minehead to Brean Down.

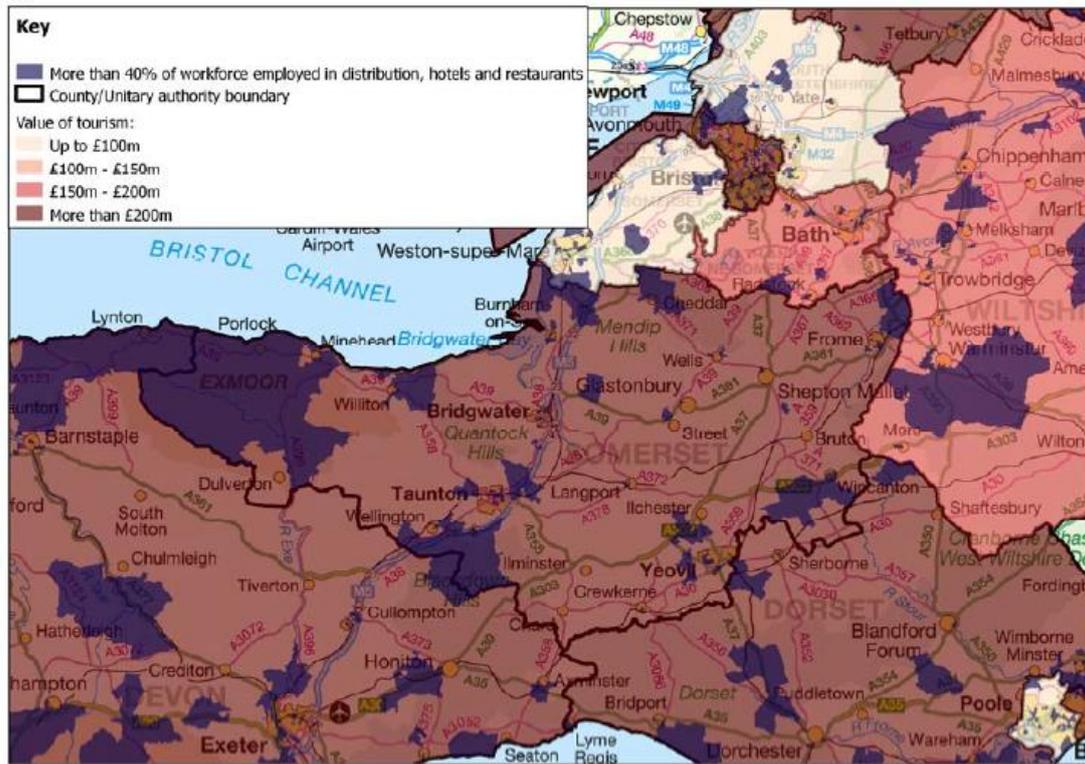
(NB: further work on tourism is summarised in the joint topic paper on economic impact and mitigation linked with tourism and the HPC proposals.)

¹⁶ Value of Tourism report (2008) - <http://www.visitsomerset.co.uk/trade/research/value-of-tourism>

¹⁷

<http://www.somerset.gov.uk/irj/public/services/directory/service?rid=/wpccontent/Sites/SCC/W eb%20Pages/Services/Services/Community/Somerset%20Economic%20Assessment>

Figure 1: value of tourism in Somerset



Source: SEAT Tool, South West Observatory/SQW Consulting.

Box 6: Research commissioned by the Sustainable Development Commission (see Appendix 1 for more information from this study)

- 3.10.1.33 An evidence-based report¹⁸ prepared on behalf of the Sustainable Development Commission references a study undertaken by Wouter Poortinga and Nick Pidgeon (2003)¹⁹ for the Leverhulme Trust, which reported on the results of a quantitative survey (carried out by MORI) covering perceptions of five key risk issues: i) climate change, ii) radiation from mobile phones, iii) radioactive waste, iv) genetically modified food and v) genetic testing. The authors concluded that, of the above, “... *radioactive waste is the most contentious risk case. ... about half of the respondents felt that radioactive waste was a “very bad thing” ...*” (p. 54).
- 3.10.1.34 The Sustainable Development Commission report also details findings from a number of current quantitative opinion research surveys on UK energy options, which have been collated in a desk study carried out by the EPSRC on behalf of RCUK (McGowan and Sauter, 2005²⁰). The EPSRC study reviewed over 30 recent surveys and opinion polls on public attitudes towards different energy generation options. It reported that, although nuclear energy might contribute to a broad policy of reducing CO₂, “... *for a majority in the UK negative aspects of nuclear such as waste disposal seem to outweigh this advantage...*” (p. 27).
- 3.10.1.35 The Sustainable Development Commission report cites the continuing importance for many members of the public of long-standing concerns arising from previous historical experience. For example, “...*many people assess the merits of possible new nuclear station construction in the light of the unresolved issues of safe disposal of radioactive waste and secure decommissioning of existing facilities. Recurrently, satisfactory solutions to these issues emerge as preconditions for looking more favourably on any new nuclear proposals. Moreover, existing research has demonstrated a widespread perception that there may be ‘no solution’ to the radioactive waste issue....*” (DTI 2002^{21 22}; Stagl²³).

¹⁸ Sustainable Development Commission, *Nuclear Paper 7: Public Perceptions and Community Issues*, March 2006

¹⁹ Poortinga, W. & Pidgeon, N: *Public Perceptions of Risk, Science and Governance: Main Findings of a British Survey of Five Risk Cases*. Centre for Environmental Risk, University of East Anglia, 2003, referenced within 9.

²⁰ McGowan, F. & Sauter, R: *Public Opinion on Energy Research: A Desk Study for the Research Councils*, 2005, referenced within 9

²¹ DTI, *Integrated Public and Stakeholder Consultation to inform the Energy White Paper*, 2002 http://www.dti.gov.uk/energy/developpep/int_public_and_stake_con_rep.pdf, referenced within 9

²² DTI, 2002b: *Our Energy Future: Creating a Low Carbon Economy*. London, HMSO, referenced within 9

²³ Stagl, S, *Multicriteria Evaluation and Public Participation: the Case of UK Energy Policy*, referenced within 9 as a forthcoming document

Box 7: Research undertaken by Cardiff University (see Appendix 1 for more information from these two studies)

- 3.10.1.36 In 2008, a report²⁴ was issued on living with nuclear power in Britain. At the outset, this summarises a number of key conclusions from previous nuclear power research. It states that “... *nuclear power is generally thought of as a uniquely worrying technology capable of generating intense emotional states such as fear and dread, due to the largely invisible and long-lasting effects it is presumed to have in the event of something going wrong, concerns about radioactive waste and a historic association with atomic weaponry.....*”.
- 3.10.1.37 The report provides the findings associated with a series of interviews and surveys with residents in three case study areas: Oldbury, South Gloucestershire; Bradwell, Essex; and Hinkley, Somerset. This research indicated that:
- The majority of participants view the existing power plant through a ‘dominant frame of ordinariness’ – their presence is part of everyday life;
 - However the above pattern can be disrupted, and the existing station perceived as threatening, in the event of ‘extraordinary’ situations, e.g. media heightened risk issues (e.g. 9/11, 07/07) or personal circumstances (e.g. a relative or friend being diagnosed with cancer);
 - Perceptions of safety / risk are frequently associated with trust or lack of trust in i) the station’s operators; ii) Government and regulators of the nuclear industry.
- 3.10.1.38 As part of the detailed case study survey, residents close to both Oldbury and Hinkley Point were asked about their levels of concern in respect of nuclear power. The survey result illustrated that while 41% were fairly or very concerned, 37% were not very concerned, and a further 22% not at all concerned. As the survey relates to people living close to an existing nuclear power plant, this result contributes to the overall conclusion that, for many, the plant is part of their normal, accepted lifestyle environment.
- 3.10.1.39 However, when questioned specifically about radioactive waste, far higher levels of concern were raised. The survey result illustrates that the vast majority of people (77%) in the surveyed areas are concerned about radioactive waste. This substantiates the conclusion that general acceptance is often caveated by specific concerns, and in particular “...*many remain concerned about the issue of radioactive waste...*” (page 49).

²⁴ *Living with Nuclear Power in Britain: A Mixed Methods Study – Summary of Findings Report*, Pidgeon, N; Henwood, K; Parkhill, K; Venables, D; Simmons, P; September 2008

Box 8: Planning for a suitable "end state" at Dounreay

3.10.1.40 Responding to a requirement from the NDA for information on research and development (R&D) activities that are needed to underpin the Lifetime Plan for the Dounreay nuclear site and the site's plan to address these needs, a document published on 25 September 2008 focuses on the relevant R&D Programme.²⁵ This includes a section on R&D requirements for the end state, which reads as follows:

"The scope for the Site End-State (and site closure) – project D1179, is split into four main categories: -Strategies, Transition Planning, Planning the End-State & Use of Performance Assessment (PA).

Following consultation during 2007 the End-State of the Dounreay site has provisionally been set as one where, following decommissioning and demolition of the (majority of) the existing facilities the cleaner areas will be cleared and de-licensed on an early timescale. The remaining areas will contain stores, which will be emptied by 2076, and the higher levels of residual contamination, which will be managed in-situ through natural attenuation and radioactive decay. It may be possible to de-license the remainder of the site within a period of a few hundred years.

The most radioactively contaminated areas of land will be excavated. Less radioactively contaminated areas will be managed through capping and monitoring. All infrastructures, except that required for operation of the stores or of benefit to future tenants, will be removed or isolated as appropriate. Foundations will be left in-situ unless there is an over-riding safety, regulatory and/or de-licensing requirement for their removal, or their removal is necessary to permit future tenancy. There will be significant landscaping of the site."

3.10.1.41 Dounreay Site Restoration Ltd issued a release in August 2010²⁶, which stated that:

"A dedicated team of DSRL staff is working with Caithness and North Sutherland Regeneration Partnership on opportunities for new industry to replace the 1700 or so jobs that will be shed at Dounreay. The main focus of the work involves:

- *Sharing of resource plans with companies gearing up to expand into marine energy and offshore oil and gas decommissioning*
- *Identifying energy-intensive businesses that can be persuaded to relocate near the proposed Pentland Firth tidal power station*
- *Supporting a community bid for a share of international work in materials testing and opportunities in the radiopharmaceuticals supply chain.*
- *Redeployment opportunities in other parts of the Babcock International Group of companies.*
- *Spin-out businesses from existing site services.*
- *Identifying opportunities for businesses in UK-wide service contracts*

²⁵ <http://www.dounreay.com/decommissioning/lifetime-plan>

²⁶ <http://www.dounreay.com/news/2010-08-27/new-site-closure-plan-begins-to-take-shape>

to the NDA estate."

Box 9: Releasing land from nuclear regulation

3.10.1.42 In February 2012, the NDA announced that large tracts of land at two Magnox sites have been officially sanctioned as available for new development after the last remaining nuclear regulations were removed.

"The land at Oldbury and Berkeley is equivalent to around 100 football pitches and can now be disposed of either by sale or for lease after the Energy Minister Lord Marland signed orders revoking the designating directions on a total of 46 hectares at the Gloucestershire sites. Each plot has already been released from the conditions of its nuclear licence, or de-licensed...

...At Oldbury, half of the original site has been released including one of the three silt lagoons. Last year, it was the largest single portion of land to be de-licensed in the UK and followed the submission of a detailed safety case that involved surface surveys of grounds and buildings, plus analysis of soil and sediment samples to assess the impact of operations over the past 50 years.

Part of the 35 hectares will now to be used by Horizon Nuclear Power, a joint venture between E.ON and RWE, who are developing plans for a new nuclear power station on land north east of the Magnox site.

The 36 hectares remaining within the nuclear licence contain the site's operational plant, including the turbine hall and reactor buildings.

At Berkeley, meanwhile, about a third of the original site is being marketed for use as a business park after revocation of the designating directions.

The 11 hectares, out of the total 38-hectare site, comprise a range of buildings including offices, warehouses, laboratories, engineering workshops, stores, substations, a pump house, waste management compounds, café, conference centre, security lodge and car park.

Known as the Berkeley Centre, the offices and labs were established as a centre of nuclear research and development for the UK electricity supply industry back in the 1960s. Later, the Berkeley Centre provided direct engineering and technical support to all the Magnox power stations.

Many buildings had no history of radiological use while others, including radio-chemistry labs and waste facilities, were decommissioned and demolished.

The site achieved de-licensing in 2006, a first de-licensing since the NDA was formed. With revocation of the designating direction, the final piece of the jigsaw has now been completed, marking the end of the NDA's clean-up mission at Berkeley Centre."

Box 10: Integrated approach to planning the remediation of sites undergoing decommissioning

3.10.1.43 The International Atomic Energy Agency (IAEA) published a report in 2009 on the approach to planning the remediation of site undergoing decommissioning. Quoting from the section on stakeholder engagement

"While project managers often think about individual projects, stakeholders may have a more general perception of the site that does not necessarily distinguish between remediation and decommissioning. As a result, when feasible due to constraints imposed by time schedules for project completion, synergies may be obtained by having remediation projects collaborate with decommissioning projects in bringing about stakeholder involvement and consultation. Active involvement of stakeholders during the design phase of projects may help in the identification of broadly acceptable end-uses of the site (and accordingly the end state), definition of priorities, and selection of technologies. Indeed, stakeholders may have a vested interest in retaining certain features and infrastructure elements. They may want to re-use buildings or roads, for instance, which will have to be considered in the decommissioning and remediation planning. Another aspect not unusual in mining communities is that locals are so used to certain man-made mining related landmarks, such as characteristically shaped spoil heaps, that they may want to retain them. Stakeholder involvement from the very beginning on may also help to create a sense of 'ownership' in the chosen paths and final site uses, thus facilitating the stewardship requirements."

Summary of local impacts: radioactive waste

Review of impacts

- 3.10.1.44 From a planning policy perspective a key issue relates to the consequences for the Somerset community of hosting radioactive waste and spent fuel storage facilities, transfer from which is subject to the construction of a Geological Disposal Facility that is able to accept radioactive waste and spent fuel from Hinkley Point C. This is likely to be for a period well in excess of 100 years, including over 50 years beyond electricity generation i.e. storage will be inter-generational.
- 3.10.1.45 Plans associated with the management of spent fuel and the timescales for interim storage of ILW represent a new approach for Hinkley Point and cumulatively introduce a new burden on the hosting communities. Spatially the impact will be for Somerset as a whole, but focused on the areas most impacted by the proposal, namely communities in West Somerset and Sedgemoor.
- 3.10.1.46 The information in Boxes 1-7 above present a significant body of evidence that the long-term storage of radioactive waste and spent fuel can have adverse impacts linked with perceived risks associated with the presence of radioactive waste and the long-term storage of ILW and spent fuel.
- 3.10.1.47 Perceived risks to the environment and public health affect the sense of wellbeing of local people. The potential for negative impacts on tourism and recreation are also identified – in an already economically-disadvantaged area – whereby decisions taken by those who might visit or invest in the local area are negatively impacted by the presence of different levels of radioactive waste and associated infrastructure on-site.
- 3.10.1.48 Impacts on well being are by their nature difficult to quantify. However, the evidence collated from primary and secondary research (summarised in published studies) shows that actual and perceived effects are frequently cited by stakeholders in respect of nuclear development proposals and have been a key consideration in past proposals. Changing perceptions will have the effect of reducing Somerset's attractiveness as a destination for tourism, as a place to invest, and for local communities as a place to live and work. These adverse impacts are additional to the in-principle impact of the development of a new nuclear power station at the location i.e. they are cumulative with the wider socioeconomic impacts of the HPC development.
- 3.10.1.49 Impacts will take effect in terms of perception from the date of any DCO consent through to closure of the storage facilities as and when a national storage / disposal facility becomes available. There is no firm date for that. The impacts are likely to become more pronounced and embedded over time, as radioactive waste and spent fuel begin to be stored on-site and the quantities stored increase.
- 3.10.1.50 Boxes 8-10 give an indication of the potential site restoration, end state and end use issues for nuclear sites and reflect various issues of relevance to long-term land use planning and community engagement. The examples chosen reflect the complexities associated with this particular type of development and the need for community engagement

to ensure that residual impacts on the site are appropriately mitigated and strengthen local capacity to make best use of the site in the long-term acknowledging the inherent challenges in so doing. The long-term impact of storage of radioactive waste and spent fuel at Hinkley Point on future land uses and site restoration needs to be considered.

3.10.1.51 The impacts identified are considered to require mitigation and/or compensation. They do not appear to be given substantive consideration in the Environmental Statement prepared by EDF.

3.10.1.52 Furthermore, it is appropriate to take a precautionary approach to the management of LLW generated at HPC, in particular linked with disposal options. This is because the current permitted capacity of the disposal facility near Drigg in Cumbria is well below the forecast volume of LLW that must be dealt with in the future.

Review of mitigation and/or compensation measures

3.10.1.53 EDFE's proposed mitigation undertakings for the DCO were initially detailed within the Pre-Application Consultation Stage 2 document 'Proposed Planning Requirements and Obligations' (undated).

3.10.1.54 Section 30 of this document outlines the proposed Community Fund which EDF intend to establish to secure benefits for the local communities in the vicinity of the HPC site. The overall objective of this fund will be to "... promote or improve the economic, social or environmental well-being of the local communities in the vicinity of the project...". It is intended that the fund is used for specific projects for the promotion or improvement of a range of specified activities including those connected with energy efficiency / sustainability; education / training; arts / culture; health; sports / recreation/ community facilities; public amenity; and the natural environment.

3.10.1.55 EDF states that a contribution of £1,000,000 will be paid into the Community Fund upon implementation, and it will be held in a designated bank account in the joint names of SCC, WSC, SDC and EDF Energy, with a view to allocation to projects approved by a bespoke Community Fund Panel represented by the above parties and independent members.

3.10.1.56 An initial Community Impact Mitigation sum of £4 million has since been secured through the s.106 agreement relating to the site preparation works planning permission.

3.10.1.57 In addition, further annual contributions have been agreed for the construction phase of the site preparation works to improve the mitigation for community well-being and disturbance. Two annual payments of £1.6 million (total £3.2 million) have been secured for the duration of the initial site preparation works; this represents a two year proportion of the balance of the £20 million community fund which EDF has announced as a commitment to cover an overall estimated construction period of 10 years for the project in the event that the DCO is granted and implemented.

Adequacy of EDF mitigation proposals

3.10.1.58 As the issues identified in relation to the period during which radioactive waste will be generated and stored on site do not appear to be given substantive consideration in the Environmental Statement (ES), there are no associated mitigation measures described in the ES.

Measures proposed by authority

3.10.1.59 Somerset County Council considers that to address the impacts identified in this paper and to address other impacts on the quality of life of Somerset communities, as set out in the LIR, additional funding is required for CIM, beyond that proposed by EDFE. Additional funding is needed to offset the likely adverse impacts and perceived 'stigma' caused by hosting long-term radioactive waste and spent fuel storage facilities at the HPC site – in association with the DCO development proposals for the construction and operation of the HPC facility.

3.10.1.60 Furthermore, Somerset County Council considers that a separate Decommissioning and Restoration Community Fund is required in order to engage the local community in planning appropriately for the end use of the site after the storage facilities for ILW and spent fuel have been removed and mitigate the permanent impacts of the development.

3.10.1.61 The need for a fund to deal with community costs is established from international and UK precedents, such as the facilities near Drigg, Dounreay, Sizewell and others. The Community Impact Mitigation paper (Appendix B.23 of the LIR) sets out the approach to calculating the per annum payments into the CIM fund.

3.10.1.62 The County Council notes the proposed approach regarding LLW and believes it to align with government policy. However, if any form of new proposal is made linked with LLW disposal in Somerset, then it will be necessary for EDFE to mitigate and/or compensate for this through an appropriate contribution.

4 The impacts of Municipal Solid Waste and Commercial and Industrial Waste

4.1 Municipal Solid Waste and Commercial and Industrial Waste

- 4.1.1.1 The development of HPC will create new arisings of Municipal Solid Waste (MSW) and Commercial and Industrial (C&I) Waste in Somerset. This will be as a result of an influx of workers, through new worker accommodation being constructed and occupied and through other activities associated with the management and delivery of the scheme locally.
- 4.1.1.2 Collection and disposal of MSW is the responsibility of Waste Collection Authorities (WCA) and Waste Disposal Authorities (WDA). Thus, the most affected of these authorities by HPC proposals in Somerset will be Somerset County Council (as WDA) and West Somerset and Sedgemoor District Councils (as WCAs).
- 4.1.1.3 The responsibilities for MSW collection and disposal are coordinated via the Somerset Waste Partnership (SWP) and related services are procured via strategic contracts – one for waste collection a separate contract for disposal.
- 4.1.1.4 The increase in MSW and C&I waste arisings will place additional burden on waste management capacity in Somerset and potentially additional burden on the services provided by SWP. As a result, it is appropriate to consider the potential nature and scale of these impacts.

4.2 EDFE's Waste Implementation Strategy

- 4.2.1.1 The Waste Management Implementation Strategy references selected pieces of legislation related to municipal waste. With the commitment from EDF that municipal waste handled from the worker accommodation will be handled as commercial waste, it would be appropriate, given Somerset's high recycling rate and award winning kerbside collection service (Sort It +), if the waste collection from worker accommodation mirrored the source separation and recycling service available to all other households in Somerset.
- 4.2.1.2 The Waste Management Implementation Strategy references selected pieces of legislation related to commercial waste; the tonnage estimates are that around 940 tonnes/annum of inert and commercial waste will be produced, and that this will give rise to a variety of commercial waste. EDF have expressed a preference for using a commercial contractor to collect this waste in line with an appropriate environmental management system.

Summary of local impacts: MSW and C&I waste

Review of impacts

4.2.1.3 The increase in MSW and C&I waste arisings will place additional burden on waste management capacity in Somerset and potentially additional burden on the services provided by SWP. However, the County Council and SWP have the following expectations associated with the HPC proposals:

- Planning for MSW collection and disposal capacity is informed by household numbers and typical waste arisings and infrastructure delivery is funded via Council Tax.
- Incoming HPC construction workers will be accommodated in a mix of existing housing stock and bespoke worker accommodation at Bridgwater.
- The existing housing stock is catered for in the long term planning of waste management needs for the area which have a significant degree of capacity flexibility. Therefore it is not expected that an unusual burden either as a result of short term changes or overall capacity need will be created from worker accommodation in this housing stock.
- It is expected that the worker accommodation at Bridgwater will be managed as a contained campus with a commercial contract put in place by EDF to secure a waste collection and disposal service. That is, the accommodation will not be subject to Council Tax and will effectively be treated as a commercial development with the 'household' waste arisings handled as C&I waste. On this basis it is assumed that the campus accommodation will not create a significant burden for public waste services locally.
- Waste disposal capacity in Somerset is operated by the private sector. While there will be some additional burden on that capacity it is not expected that the scale of MSW and C&I wastes arising will give rise to the need for new investment that might prejudice the existing waste disposal services provided to the SWP.

4.2.1.4 Should the above expectations not prove accurate and a material burden is placed upon the waste collection and/or disposal costs of the SWP then it will be necessary for EDF to mitigate and/or compensate for this through an appropriate contribution.

4.2.1.5 Conventional waste management is considered in Chapter 8 of Volume 2 of the Environmental Statement. The assessment does not follow the standardised 'EIA' style approach for waste issues. Furthermore, Municipal Solid Waste is only indirectly mentioned within the 'operational' component of the ES's waste assessment. Commercial and industrial waste is not mentioned in the ES. Both types of waste are therefore assumed to be addressed within the more generic 'construction' and 'operational' waste assessments that are provided.

- 4.2.1.6 The ES lacks a clear statement in this regard but appears to conclude that there will not be any significant effects arising from management of these wastes. The indirect impacts of waste management on transportation appear to be considered (Chapter 10, Volume 2). Effects relating to soils and geology and groundwater are also addressed (Volume 2, Chapters 14 and 15 respectively).
- 4.2.1.7 As covered in the next subsection of this report, the ES indicates that construction waste from the main site can be accommodated by existing waste management facilities (Section 8.7.1, Volume 2). This is apparently based on the assumption that the total construction waste generated will be evenly spread over a 10 year period. It is questionable whether this is plausible.
- 4.2.1.8 The ES is more nuanced in its assessment of construction waste management for the associated developments. Capacity to accommodate waste from the associated developments may be constrained, owing to their shorter construction timeframe. The adoption of the waste hierarchy is emphasised, and the possible need to export waste to other counties is identified (Section 8.7.4, Volume 2).
- 4.2.1.9 The ES indicates that operational waste management should not pose 'any significant additional pressure on the existing waste management facilities' (Section 8.7.6 and 8.7.9, Volume 2).

Adequacy of EDF mitigation proposals

- 4.2.1.10 There is insufficient clarity at this early stage of the proposed development on the potential impacts of HPC proposals associated with MSW and C&I waste. Given the current level of knowledge and expectations associated with HPC proposals, it is not considered necessary at this time to agree additional mitigation and/or compensation for the impacts on MSW and C&I waste management in Somerset.

Measures proposed by authority

- 4.2.1.11 The Waste Planning Authority, working with the Somerset Waste Partnership (representing the Waste Collection Authorities and Waste Disposal Authority in Somerset), will monitor the developments associated with HPC that generate MSW and/or commercial and industrial waste. Controls will need to be added to cover such monitoring, with a trigger point for discussions on mitigation and/or compensation if a material burden is placed on the SWP. Alternatively, the identification and allocation of contingency funding as an additional part of the Community Impact Mitigation (CIM) fund, which would be drawn down if required, would address this concern.

5 The impacts of Construction and Demolition Waste

5.1 Introduction

- 5.1.1.1 There is the potential for substantial quantities of construction and demolition (C&D) waste to arise as a result of the delivery and eventual decommissioning of HPC. The scale of the project means that this has the potential to influence existing management and disposal capacity for C&D waste in Somerset and the wider south west region. Linked with this, there is also has the potential to give rise to significant transport effects through the transfer of C&D waste by road. This issue is addressed through the Transport Topic Paper.
- 5.1.1.2 C&D waste management capacity is provided by the private sector. It is assumed that the market will be able to respond to deliver C&D waste management needs for HPC in appropriate locations without the need for additional capacity to be brought forward or for other public sector intervention.

5.2 EDFE's Waste Implementation Strategy

- 5.2.1.1 Construction and demolition waste will be the largest proportion of waste produced from the Hinkley Point C project. In line with the waste hierarchy, and general reuse principles, EDF hope to achieve a level of re-use that is in line with, or more sustainable than current best practice, whereby <10% of construction, demolition and engineering waste will be sent to landfill
- 5.2.1.2 In the **construction phase** of the project, the majority of excavated materials created to facilitate construction would be retained on site for re use as backfill and landscaping during reinstatement during the operational phase. The construction phase of HPC and off site developments is likely to generate the following main waste streams:

- aggregate;
- cement;
- concrete;
- formwork;
- prefabricated parts;
- reinforcing steel;
- sand;
- pipe work;
- structural steelwork.

In addition, the following waste materials will also be produced, in smaller quantities:

- asphalt;
- brick;
- cardboard;
- ceramic/bricks;
- general waste;
- glass;
- hazardous;
- insulation;
- masonry;
- metals;
- packaging waste;
- paint cans;
- plaster;
- plastics;
- roof materials;
- scrap metal;
- soils/excavated waste;
- timber;
- vinyl; and
- wiring.

5.2.1.3 General waste such as card, food, paper, glass etc will also be produced from the construction workers.

5.2.1.4 EDFE estimates that the total quantity of wastes to be generated during the earthworks / construction phase of HPC and associated developments will be 259,817 tonnes of inert material, 98,593 tonnes of non-hazardous waste and 21,116 tonnes of hazardous waste. Including contingency projections this means an overall estimated total of 433,433 tonnes, over half of which will be inert.

5.2.1.5 EDFE have detailed that material; if not able to be reused will be destined for processing through a MRF. At the current time, there is no MRF in the West Somerset area which could accept these materials, and thus they will need to be transported out of the district. The same applies for composting and anaerobic digestion facilities.

5.2.1.6 Estimated figures for the **operational phase** of HPC showing an inert and commercial waste arising of 940 tonnes per year (for 60 years); inert waste is waste such as glass and bricks.

5.2.1.7 An estimate of decommissioning wastes is detailed in the table overleaf.

Estimate of decommissioning waste arisings from the HPC Development Site and Associated Developments

Decommissioning / Post-Operational Phase Waste (tonnes)	Inert (79%)	Non-hazardous (20%)	Hazardous (1%)	TOTAL	TOTAL (Contingency = 10% HPC Power station, 20% AD's)
HPC Development Site					
HPC Nuclear Power Plant	115,100	26,140	1,457	145,697	160,267
Temporary jetty	37,707	9,546	477	47,730	57,276
HPC accommodation campus	29,709	7,521	376	37,606	45,128
Associated Developments					
Combwich Wharf Freight Laydown facility	265,756	67,280	3,364	336,400	403,680
Bridgwater A accommodation campus	61,523	15,576	778	77,877	93,453
Cannington Park and Ride	14,096	3,569	178	17,843	21,412
Junction 23	76,343	19,327	966	96,636	115,964
Junction 24	2,462	623	31	3116	3,739
Williton Park and Ride	815	206	10	1031	1,238
TOTAL	603,511	149,788	6,180	763,936	902,157

5.2.1.8 The main construction waste peak occurs during 2013/2014, while reinstatement waste volumes peak the latter part of 2021. This peak assumes a conservative, 'worst case scenario' in terms of waste production with the removal of the following sites: the on-site accommodation campus, Bridgwater A, Cannington Park and Ride, Combwich Wharf Freight Logistics/Storage Facility and Junction 23/24 of the M5

Summary of local impacts: construction and demolition waste

Review of impact

5.2.1.9 C&D waste management capacity is provided by the private sector. It is assumed by EDFE that the market will be able to respond to deliver C&D waste management needs for HPC in appropriate locations without the need for additional capacity to be brought forward or for other public sector intervention. However, if this assumption proves not to be correct and either significant environmental impacts arise as a result of C&D waste disposal needs, or a burden is placed on SCC as waste planning authority, then EDF will be required to mitigate accordingly the following.

- Potential impacts from transporting wastes to the proposed waste compound at Hinkley C.
- Impacts on the environment through on-site storage of soils for more than three years.
- General impacts of construction and demolition waste management especially through transportation to off-site facilities.
- Contamination of any land, including groundwater, to avoid causing significant harm to persons or pollution of controlled waters or the environment

5.2.1.10 EDF will need to further consider the availability of waste facilities within reasonable distances for processing of wastes.

5.2.1.11 Conventional waste management is considered in Chapter 8 of Volume 2 of the Environmental Statement. The assessment does not follow the standardised 'EIA' style approach for waste issues, but appears to conclude that there will not be any effects arising from waste management. The indirect impacts of waste management on transportation appear to be considered (Chapter 10, Volume 2). Effects relating to soils and geology and groundwater are also addressed (Volume 2, Chapters 14 and 15 respectively).

5.2.1.12 The ES indicates that construction waste from the main site can be accommodated by existing waste management facilities (Section 8.7.1, Volume 2). This is based on the assumption that the total construction waste generated will be evenly spread over a 10 year period (Section 8.7.1, Volume 2). It is questionable whether this is plausible.

5.2.1.13 The ES is more nuanced in its assessment of construction waste management for the associated developments. Capacity to accommodate waste from the associated developments may be constrained, owing to their shorter construction timeframe. The adoption of the waste hierarchy is emphasised, and the possible need to export waste to other counties is identified (Section 8.7.4, Volume 2).

Adequacy of EDF mitigation proposals

5.2.1.14 The ES indicates that conventional waste from construction and 'post-operation' will be managed through the existing facilities within Somerset, and coordinated through a site waste management plan (SWMP) (section 8.8.3, Volume 2). The SWMP does not appear to be attached to the ES,

so therefore cannot be commented upon.

- 5.2.1.15 Given the current expectations associated with HPC proposals, it is considered necessary to investigate agreeing additional mitigation and/or compensation for the impacts associated with C&D waste management in Somerset.

Measures proposed by authority

- 5.2.1.16 The Waste Planning Authority, working with relevant partners, will monitor the generation and management of construction and demolition waste from the HPC main site and associated developments.
- 5.2.1.17 A Site Waste Management Strategy will be required (or over-arching site waste management plan) that sets the criteria to which detailed site waste management plans for the development should adhere. This enables more than one site waste management plan to be written for the project according to a standard model, thus supporting a phased approach to delivery of the development. The SWMP Regulations 2008 state that SWMPs are to be made available at the site or site offices. This means that relevant information will be available upon request.
- 5.2.1.18 Given the size and magnitude of the project, and anticipated waste arisings, the applicant shall prepare and submit bi-monthly monitoring reports to the enforcing authority (or whichever time period agreed with the enforcing authority) in relation to waste arisings and their management at all sites covered by the SWMPs prepared by EDFE or its principal contractors. These reports shall be prepared at the developer's expenses and approved by the Environment Agency and the County Planning Authority. Authorities listed under Section 15 of the SWMP Regulations 2008 would need to confirm who is to be the enforcing authority; this is likely to be the Environment Agency given the scale of the proposed development.
- 5.2.1.19 Controls will need to be added to cover such monitoring, with a trigger point for discussions on mitigation and/or compensation. This is to be supported through a requirement to the effect that EDFE discuss with SCC as WPA any applications associated with HPC and associated developments regarding C&D waste management or disposal.
- 5.2.1.20 Furthermore, EDFE will need to further consider the availability of waste facilities within reasonable distances for processing of wastes. This will be the subject of a requirement for review of waste management proposals in advance of demolition of each of the associated development facilities. The review would take into account existing and any anticipated new waste infrastructure at that time, along with any new waste management methods, supporting waste minimisation and diversion of waste away from landfill via the most appropriate route (taking opportunities to support local reuse and recovery wherever possible).

6 Review of relevant case studies

- 6.1.1.1 Sections 3, 4 and 5 of this topic paper have reviewed the impacts associated with waste arisings from Hinkley Point C and associated developments.
- 6.1.1.2 The impacts associated with radioactive waste and spent fuel have been shown to require the most detailed consideration in terms of mitigation and/or compensation. This section identifies relevant case studies that may have a bearing in shaping an appropriate response to those impacts.

Case Study 1: Low level waste repository nr Drigg

- 6.1.1.3 There is a precedent for developer contributions to a community fund associated with proposals for the management of nuclear waste at the LLW Waste Repository near Drigg in Cumbria (Cumbria County Council planning application reference 4/07/9010).
- 6.1.1.4 In this case, the Nuclear Decommissioning Authority (NDA) agreed to contribute a two-stage payment of £10 million towards the provision of a Community Fund with an additional payment of £1.5m for each year the waste is deposited (expected to be 10 years). This was proposed under a unilateral undertaking under S.106 of the Town and County Planning Act 1990.
- 6.1.1.5 Paragraph 12 of the Unilateral Undertaking, dated 18 January 2008, states that *"... in entering this planning obligation the NDA recognises that, although the design of the Development has had due regard to minimising local impacts and although the total benefit from the development in terms of contributing to meeting a national need will outweigh and residual adverse impacts of the Development, it is appropriate to make financial provision to meet local needs arising from the Development including assisting participation of the community in the Development and to mitigate the residual economic and other impacts that will be caused by the Development ..."*.
- 6.1.1.6 The above contribution must be spent on initiatives that are consistent with NDA's socio-economic policy, including employment, education and skills, economic and social infrastructure and economic diversification. A Co-operation Agreement has since been drawn up between the NDA, Cumbria County Council and Copeland Borough Council to administer the Copeland Community Fund.
- 6.1.1.7 The impacts of the proposed development upon the local community, and the proposed benefits arising from the above sum, were a material planning consideration when the application was determined. The Head of Environment's report to Committee (dated 22 January 2008) stated that:

"...one of the main planning policy issues is the consequences for the West Cumbria community of continuing to host radioactive waste facilities. It is clear that their presence has adverse impacts on the area, mainly through perceptions of what they are and what implications they may have locally. The County Council has been liaising closely with Copeland Borough Council members and officers over the issue of a

community benefits package to offset the adverse impacts and stigma caused by hosting this unique Low Level Waste Repository.....”.

- 6.1.1.8 The purpose of the agreed endowment fund was described within the report as being *“....to support projects that would help to overcome the impacts of this type of facility within Copeland. It would be aimed at diversifying the local economy and making the area a more attractive place to live, work and invest....”.*

Case Study 2: LLW disposal facility adjacent to Dounreay, North Scotland – Community Fund

- 6.1.1.9 Dounreay represents one of the early types of nuclear reactor. Constructed in the 1950s, it ceased operation in 1994 and is currently undergoing decommissioning. An application was made for the disposal of LLW from the decommissioning process in six shallow sub-surface vaults to Highland Council in June 2006 (planning application reference 06/00373/FULCA) following the Scottish Environment Minister’s previous refusal of proposals to move the LLW to the Drigg repository.
- 6.1.1.10 Planning consent was granted in January 2009. Paragraph 7.8 of the Director of Planning and Development’s Report to Committee of 13 January 2009 states that *“...the Council has been informed by the applicant that a community benefit package is proposed. This is intended to benefit the community within Caithness and North Sutherland travel to work area....”.* He also referred in paragraph 8.3 to the major issues in determination being *“... the acceptability of the location, its resultant impact on visual amenity and, being outwith the existing site and closer to existing properties, the perceived negative image of the nuclear waste legacy that it creates for that community....”.*
- 6.1.1.11 There is no mention within the committee report of the mechanism by which the contribution referred to is to be secured.
- 6.1.1.12 However, a case study note produced by NuLeAF dated July 2009 states that *“... it is understood that the provision of a Community Fund in association with the development of a LLW disposal facility adjacent to the Dounreay site ... makes use of powers in Scottish law that are equivalent to S106. In this case, the total value of the fund is £4 million over the lifetime of the facility. £1 million is to be made available in 2011, when construction begins, with payments of £300,000 per year as soon as the facility becomes operational (expected in 2014)...”.*

Case Study 3: Dry fuel store at Sizewell

- 6.1.1.13 On 22 July 2011, the Minister for Energy granted approval for the construction of a dry fuel store for spent fuel at Sizewell B nuclear power plant. The mitigation agreed was summarised as follows in a Nuleaf briefing paper:

A mitigation package comprising an initial payment of £120K and annual payments of £20K for the subsequent 60 year or until the store is decommissioned was set up under an S106 Agreement. British Energy accepted Suffolk County Council's argument that construction of the store would delay site restoration and release of part of the site. Monies will be managed by a Funding Group set up by British Energy, Suffolk County Council and Suffolk Coastal District Council in consultation with the Suffolk Coast and Heaths Unit. Funds will be used to improve the amenity and accessibility of the Area of Outstanding Natural Beauty in which Sizewell is located. The contribution will be reviewed every 5 years against the Consumer Price Index to ensure value is not eroded.

Case Study 4: storage facility at wuerenlingen, switzerland

- 6.1.1.14 The Wuerenlingen facility in Switerland provides facilities for storage of LLW, ILW and spent fuel. Annual payments of £0.95 million have been agreed, with the benefit only available for 20 years, subject to local approval. This facility is believed to play a national role in the storage of radioactive waste in Switzerland; nonetheless it forms part of the evidence underlying the rationale that local communities should receive some form of mitigation and/or compensation for the acceptance of such facilities in their local environment.

7 Basis for calculating the Obligations

7.1 Introduction

7.1.1.1 The Government's recent review of Waste Policy in England 2011, published in July 2011, places significant emphasis on the empowerment of local communities as part of a shift of power away from Central Government in accordance with the wider strategic objectives associated with Localism and the 'Big Society'. Specifically, the foreword to the section on 'Infrastructure and Planning' stresses that "...local communities should benefit from hosting waste infrastructure and be involved from an early stage in planning for infrastructure.....". This point is developed in paragraph 264 as follows:

"... the principle that those most impacted should benefit most should operate across all scales from street to neighbourhood to local authority. How to achieve this should be part of an ongoing dialogue between communities, local authorities, waste management companies and developers.....".

7.1.1.2 Somerset County Council has produced a paper (Waste Topic Paper 6) on radioactive waste as part of its work preparing the Waste Core Strategy, part of the emerging Minerals and Waste Local Development Framework which will cover the period to 2028. This reports the following:

"... Permanent nuclear waste storage facilities have been strongly resisted in previous Somerset planning policy. Policy in respect of temporary facilities has been very restrictive as per policy W15 [of the adopted Somerset Waste Local Plan]. If proposals for nuclear waste storage associated with Hinkley Point come forward in the future, robust provision for community benefits should form part of planning proposals. This is to reflect Government thinking and would follow arrangements made at the national long term storage facility near Drigg, Cumbria...." ²⁷.

7.2 Informing the Community Impact Mitigation Fund

7.2.1.1 If the DCO application is granted, Somerset County Council would expect the immediate vicinity and wider area of Somerset to receive compensation through the form of a long-term legacy fund to address the issues associated with the on-site storage of radioactive waste and spent fuel. Though considered as a countywide issue, this would be targeted primarily at those most affected, principally communities in West Somerset and Sedgemoor.

7.2.1.2 The approach this fund is considered in more detail in the Community Impact Mitigation Fund.

²⁷ WCS Waste Topic Paper 6: Radioactive Waste, SCC, June 2011

- 7.2.1.3 Such funding would address the direct and indirect impacts arising from the management and long-term presence of radioactive waste and spent fuel in Somerset. Relevant impacts include those directly related to the operation and long term management of the storage facilities and also the perceived impacts, which have the potential to significantly impact on local health and well being and on the local economy if not actively mitigated. The need for a fund to deal with community costs is established from international and UK precedents.
- 7.2.1.4 It would recognise a combination of factors including, but not limited to:
- the presence of facilities to manage radioactive waste and spent fuel within the community which will not achieve 'no danger' status as defined in the Nuclear Installations Act 1965 for multiple generations;
 - the precedents that exist for the establishment of community funds associated with radioactive waste management developments (see the case studies above); and
 - local and waste planning policy requiring maximising the benefits to local communities.

Priorities for the fund

- 7.2.1.5 The Fund's purpose would be to support projects that would help to overcome the impacts of this type of facility within Somerset. It would be aimed at helping diversify the local economy in its context of having radioactive waste stored in Somerset and retaining and enhancing the areas attraction as a place to live, work and invest. These aims align with the emerging Somerset Waste Core Strategy, the Hinkley Point C Supplementary Planning Document and the Community Strategies referred to in Section 2 of this topic paper.
- 7.2.1.6 It is envisaged that the Fund could be targeted toward the following initiatives, subject to their business cases and financial viability checks.:
- 1) Mental health support infrastructure e.g. for those who would benefit from targeted support. Concerns about environmental health hazards can produce significant impacts on the mental, physical and emotional well being of the local population. (Reference should also be made to the Health topic paper and associated requirement for a Psychological Well-being Practitioner.)
 - 2) Waste management training and skills development (via relevant local training centres such as the skills college in Bridgwater and West Somerset Community College) targeting waste and construction sectors.
 - 3) A proportion of the Fund could be set aside for broader economic development, supporting the diversification of local economies into other sectors, in particular linked with SME innovation, research and development, higher value job creation and the proposed low carbon development cluster.

7.3 Decommissioning and Restoration Community Fund

- 7.3.1.1 As a separate fund, also index linked, it is proposed that the decommissioning phase would trigger a further payment of £3 million, to empower the local community to prepare for eventual release of the site and help to ensure that suitable funds are available to evaluate, challenge and promote successor site end-uses. It is important to secure a genuine alternative to energy generation at the site in the future and mitigate the residual impacts of the development.
- 7.3.1.2 Legacy planning is an accepted concept, for example, most recently exemplified by plans associated with the Olympic Games. Focusing on the legacy from the Olympics, the Local Strategic Partnership allocated £1 million of Neighbourhood Renewal Funding to the Olympics bid, and a further £12 million for 'kick starting' legacy processes.²⁸
- 7.3.1.3 The concern over a link between radioactive waste and future land use planning is highlighted in an article (published in June 2010) on the Olympic stadium's legacy, which stated that the development of the Olympic site in east London after the Games have finished could be in jeopardy because of radioactive waste buried beneath the site. It was reported that an independent nuclear analyst commented: *"The Olympic site's hurried and unplanned development may have resulted in a great deal of public harm to the local communities remaining around the site. Overall, there is some doubt about the applicability and validity of the radiological risk analysis undertaken for the future legacy use."*²⁹
- 7.3.1.4
- 7.3.1.5 A Decommissioning and Restoration Community Fund would help to tackle such long-term planning issues head-on, and ensure that the local community is involved in such planning. It is noted that via the recent commencement of the Localism Act 2011 there is a formal process through which communities can become more involved.
- 7.3.1.6 The Decommissioning and Restoration Community Fund is considered separate from the Community Impact Mitigation (CIM) Fund.

²⁸ Quoting from "London 2012: Olympic Legacies, Conceptualising legacy, the role of Communities and Local Government and the regeneration of East London"

²⁹ <http://www.guardian.co.uk/business/2010/jun/20/radioactive-waste-olympic-site>

8 Related Requirements

- 8.1.1.1 Related obligations and requirements are listed in the summary at the start of this topic paper.

APPENDIX 1:

RESEARCH INTO PUBLIC PERCEPTIONS OF NUCLEAR DEVELOPMENT

The following presents a summary of research into the public's perceptions of nuclear development. It comprises research undertaken at the macro-level (the public in general) along with research that specifically targets those communities with specific experience of nuclear power proposals.

RESEARCH UNDERTAKEN BY THE SUSTAINABLE DEVELOPMENT COMMISSION IN RESPECT OF PUBLIC PERCEPTIONS AND COMMUNITY ISSUES AND NUCLEAR POWER, MARCH 2006³⁰

This evidence-based report prepared on behalf of the Sustainable Development Commission was intended to provide, at a strategic level, a clearer picture of public and community perceptions of nuclear power and wider community issues, in order to inform future policy and decision-making in this area (Executive Summary, page 2). The research methods used included desk-research, interviews with key actors, and interpretation informed by wider sociological and cultural understanding of public responses to environmental concerns and responsibilities.

A selection of the key findings of the SDC report, insofar as they relate to people's opinions in respect of the generation and storage of radioactive waste, is presented below.

The SDC report references a study undertaken by Wouter Poortinga and Nick Pidgeon (2003)³¹ for the Leverhulme Trust, which reported on the results of a quantitative survey (carried out by MORI) covering perceptions of five key risk issues: i) climate change, ii) radiation from mobile phones, iii) radioactive waste, iv) genetically modified food and v) genetic testing. The authors concluded that, of the above, "... radioactive waste is the most contentious risk case. ... about half of the respondents felt that radioactive waste was a "very bad thing" ..." (p. 54).

The SDC report also details findings from a number of current quantitative opinion research surveys on UK energy options, which have been collated in a desk study carried out by the EPSRC on behalf of RCUK (McGowan and Sauter, 2005³²). This study reviewed over 30 recent surveys and opinion polls on public attitudes towards different energy generation options. The study reported that, although nuclear energy might contribute to a broad policy of reducing CO₂, "... for a majority in the UK negative aspects of nuclear such as waste disposal seem to outweigh this advantage..." (p. 27).

³⁰ *The Role of Nuclear Power in a Low Carbon Economy: Paper 7 – Public Perceptions and Community Issues* - Sustainable Development Commission, March 2006

³¹ Poortinga, W. & Pidgeon, N: *Public Perceptions of Risk, Science and Governance: Main Findings of a British Survey of Five Risk Cases*. Centre for Environmental Risk, University of East Anglia, 2003, referenced within 9.

³² McGowan, F. & Sauter, R: *Public Opinion on Energy Research: A Desk Study for the Research Councils*, 2005, referenced within 9

The SDC report cites several studies and polls that have sought to gauge general public opinion in respect of nuclear power. Analysis of such surveys suggests that, while public perceptions of nuclear power do appear to have become slightly less negative in recent years, currently “... *there is only limited (less than 30%) support for a new programme of nuclear power stations, particularly when compared with other, renewable technologies...*” (Executive Summary, page 2). The report cites the continuing importance for many members of the public of long-standing concerns arising from previous historical experience. For example, “...*many people assess the merits of possible new nuclear station construction in the light of the unresolved issues of safe disposal of radioactive waste and secure decommissioning of existing facilities. Recurrently, satisfactory solutions to these issues emerge as preconditions for looking more favourably on any new nuclear proposals. Moreover, existing research has demonstrated a widespread perception that there may be ‘no solution’ to the radioactive waste issue...*”. (DTI 2002^{33 34}; Stagl³⁵).

Reference is made within the SDC report to qualitative research which tends to confirm the significance of longer-standing concerns for public attitudes. Such research includes a DTI commissioned public and stakeholder consultation exercise undertaken in 2002 as part of the Government’s Energy Review. This included focus groups run by UK CEED, a set of community workshops run by the New Economics Foundation, and a web-based consultation process administered by Dialogue by Design (see ^{12, 13}). This research found that members of the public consulted held wide-ranging views on nuclear power, from those who were completely opposed to its use, to those who supported it. It suggested that, while a proportion of the opposition to nuclear power was based on principle, and was therefore unlikely to change, there appeared also to be a large body of opinion which was both “... *concerned and yet undecided...*”. For this group certain key factors influenced judgements about the nuclear industry. Amongst these, the waste issue was seen as of critical importance, including a widely-held perception that there was currently no acceptable solution to its long-term secure management.

³³ DTI, *Integrated Public and Stakeholder Consultation to inform the Energy White Paper*, 2002 http://www.dti.gov.uk/energy/developpep/int_public_and_stake_con_rep.pdf, referenced within 9

³⁴ DTI, 2002b: *Our Energy Future: Creating a Low Carbon Economy*. London, HMSO, referenced within 9

³⁵ Stagl, S, *Multicriteria Evaluation and Public Participation: the Case of UK Energy Policy*, referenced within 9 as a forthcoming document

RESEARCH UNDERTAKEN BY CARDIFF UNIVERSITY IN RESPECT OF PUBLIC PERCEPTIONS OF CLIMATE CHANGE AND ENERGY FUTURES, 2010³⁶

The purpose of this report was twofold. Firstly it aimed to examine public attitudes towards climate change and different forms of energy production, and secondly to investigate how public views in relation to these issues have changed since a major survey conducted by the research team in 2005. Issues examined in detail in the report included current beliefs about nuclear power, including perceived risks and benefits, trust in authorities, and attitudes to nuclear energy when set against climate change and energy security concerns.

The research was based upon an interview survey undertaken by Ipsos MORI. A nationally representative sample of the British population aged 15 years and older was interviewed. The results therefore represent a broad-brush cross-section of the population, and do not reflect the specific views of those living within proximity to an existing or proposed nuclear facility.

A series of questions was asked, relating to people's perceptions of the risks and benefits of nuclear power. The salient results are summarised below:

- Most people (61%) agree that there are risks to people in Britain from nuclear power, although this figure has fallen since the same question was asked in 2005 (72%);
- More than half of people (60%) agree that there are benefits to people in the UK from nuclear power (compared with 49% in 2005);
- More than half (54%) of people remain either 'fairly concerned' or 'very concerned' about nuclear power (compared with 58% in 2005);
- Only 39% of respondents consider that the nuclear industry can be trusted to run nuclear power stations safely (although this does represent an increase on 31% in 2005).

³⁶ *Public Perceptions of Climate Change and Energy Futures in Britain: Summary Findings of a Survey Conducted in January-March 2010*, Spence, A; Venables, D; Pidgeon, N; Poortinga, W; Demski, C; 2010

RESEARCH ON LIVING WITH NUCLEAR POWER IN BRITAIN UNDERTAKEN BY CARDIFF UNIVERSITY, SEPTEMBER 2008³⁷

This report summarises, at the outset, a number of key conclusions from previous nuclear power research. It states that “... *nuclear power is generally thought of as a uniquely worrying technology capable of generating intense emotional states such as fear and dread, due to the largely invisible and long-lasting effects it is presumed to have in the event of something going wrong, concerns about radioactive waste and a historic association with atomic weaponry.....*”.

It also reports that “... *research which has focused on communities living in very close proximity to nuclear facilities has found that proximity is associated with somewhat higher levels of support for nuclear power (Eiser, et al, 1995³⁸)...*”. This is attributed to factors such as perceived economic benefits. However the above has to be considered in the context of qualitative research on local communities living in very close proximity to the nuclear plants at Sellafield and Cap le Hague which suggests that, “... *even where support and acceptance is expressed, this can be highly qualified with a degree of underlying unease always present (Macgill, 1987³⁹, Zonabend, 1993⁴⁰)....*”.

The report also highlights key conclusions that have arisen from research on other major socio-technical and environment hazards and their use in appreciating “...*the complexities of understanding local communities’ thoughts, feelings and perceptions of living close to such industrial developments...*”. It summarises three assertions about the perceived impacts that such developments may have on local communities in close proximity:

- i) Local people may feel that their area is ‘geographically stigmatised’ due to the presence of a hazardous facility, and that they too are stigmatised by association Edelstein, 1987⁴¹; Bush et al⁴², 2001; Flynn et al, 2001⁴³);
- ii) Local people may reject suffering any negative effects of living close to a socio-technical or environmental hazard, in an effort to prevent being stigmatised (the so-called ‘halo’ effect – Bickerstaff and Walker, 2001⁴⁴);

³⁷ *Living with Nuclear Power in Britain: A Mixed Methods Study – Summary of Findings Report*, Pidgeon, N; Henwood, K; Parkhill, K; Venables, D; Simmons, P; September 2008

³⁸ *Nuclear Neighbourhoods: Community Response to Reactor Siting*, Eiser, J D; Ven der Pligt, J; Spears, R, 1995, referenced in 16

³⁹ *The Politics of Anxiety: Sellafield’s Cancer-link Controversy*, Macgill, SM, 1997, referenced in 16

⁴⁰ *The Nuclear Peninsula*, Zonabend, F, 1993, referenced in 16

⁴¹ *Towards a theory of environmental stigma*, Edelstein M R, 1987, in *Public Environments*, Harvey, J and Denning, D (eds), referenced in 16

⁴² *Even the birds round here cough – stigma, air pollution and health in Teeside*, Bush, J; Moffat, S; Dunn, C, 2001 in *Health & Place*, Volume 7, referenced in 16

⁴³ *Risk, Media and Stigma*, Flynn, J; Slovic, P; Kunreuther, H; 2001, referenced in 16

⁴⁴ *Public understandings of air pollution: the ‘localisation’ or environmental risk*, Bickerstaff, K and Walker, G, 2001 in *Global Environmental Change*, Volume 11, no.2, referenced in 16

- iii) Whilst the apparent negative features may be striking to those who live outside of the area, for those living there it may just be seen as a 'part of the local experience' (Burningham and Thrush, 2004⁴⁵).

The remainder of the report provides the findings associated with a series of interviews and surveys with residents in the following three case study areas, in order to ascertain "... *how people residing in close proximity to a major socio-technical hazard / site (nuclear power plant) 'live with risk' in their everyday lives...*".

- Oldbury, South Gloucestershire;
- Bradwell, Essex; and
- Hinkley, Somerset.

The key points arising from these surveys include the following:

- The majority of participants view the existing power plant through a 'dominant frame of ordinariness' – their presence is part of everyday life;
- However the above pattern can be disrupted, and the existing station perceived as threatening, in the event of 'extraordinary' situations, e.g. media heightened risk issues (e.g. 9/11, 07/07) or personal circumstances (e.g. a relative or friend being diagnosed with cancer);
- Perceptions of safety / risk are frequently associated with trust or lack of trust in i) the station's operators; ii) Government and regulators of the nuclear industry.

As part of the detailed case study survey, residents close to both Oldbury and Hinkley Point were asked about their levels of concern in respect of nuclear power. The survey result, as shown in the table below, illustrated that while 41% were concerned, 37% were not very concerned, and a further 22% not at all concerned. As the survey relates to people living close to an existing nuclear power plant, this result contributes to the overall conclusion that, for many, the plant is part of their normal, accepted lifestyle environment.

⁴⁵ *Pollution concerns in context: a comparison of local perceptions of the risk associated with living close to a road and a chemical factory*, Burningham, K and Thrush, D, 2004 in *Journal of Risk Research*, Volume 7, no.2, referenced in 16

How concerned are you, if at all, about nuclear power?

	Not at all concerned (%)	Not very concerned (%)	Fairly concerned (%)	Very concerned (%)
Oldbury / Hinkley Point	22	37	27	14

However, when questioned specifically about radioactive waste, far higher levels of concern were raised. The survey result, as shown in the table below, illustrates that the vast majority of people (77%) in the surveyed areas are concerned about radioactive waste. This substantiates the conclusion that general acceptance is often caveated by specific concerns, and in particular “...many remain concerned about the issue of radioactive waste...” (page 49).

How concerned are you, if at all, about radioactive waste?

	Not at all concerned (%)	Not very concerned (%)	Fairly concerned (%)	Very concerned (%)
Oldbury / Hinkley Point	6	17	35	42