

HORIZON

NUCLEAR POWER

NOVEMBER 2009

ENERGY WORKING FOR BRITAIN

A UK company of E.ON and RWE

**ENVIRONMENTAL IMPACT ASSESSMENT
SCOPING REPORT**
PROPOSED NUCLEAR POWER STATION
NEAR OLDBURY-ON-SEVERN
SOUTH GLOUCESTERSHIRE

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RWE
The energy to lead

Horizon Nuclear Power Limited

Proposed Nuclear Power Station at Oldbury

Environmental Impact Assessment

Scoping Report

November 2009



Contents

1	Introduction	5
	Background	5
	Site Description	5
	Project Outline	6
	Purpose of the Scoping Report	7
	Objectives of the Scoping Report	8
	Scoping Report Structure	9
	Strategic Context	10
	Approach to the EIA	12
	Generic Design Assessment	12
	Strategic Siting Assessment	13
	Consents Required	15
	Financing Arrangements for Waste and Decommissioning Costs	17
	Justification Process	17
2	Project Description	18
	Introduction	18
	Reactor type	18
	Cooling water	19
	Connection to the National Grid	20
	Development boundaries	20
	Access	21
	Radioactive waste storage	21
	Alternatives	22
	Outline of construction activities	22
	Operation and decommissioning timescales	23
3	Approach to the EIA	24
	Introduction	24
	EIA Guidance	24
	Project Description	25
	Alternatives	25
	Baseline	25
	Assessment of Effects	26
	Form of the Environmental Statement	28
4	EIA Topics	29
	Introduction	29
	Geology, hydrogeology and soils	30

	Surface water and flooding	33
	Landscape and visual amenity	35
	Ecology and nature conservation	38
	Archaeology and cultural heritage	44
	Traffic and transport	47
	Noise and vibration	50
	Air quality and dust	52
	Public access and recreation	53
	Socio-economics	55
5	Health, Safety and Security	57
	Health and Safety	57
	Security	57
6	Way Forward	59
	Environmental Impact Assessment	59
	Consultation	61
	Appropriate Assessment	62
	Have Your Say	63
	Consultees	63
	References	67

Figures

1. **Site Location**
2. **Licensed site, permanent development boundary and nominated area**
- 3a. **Illustrative AP1000 reactor design site layout**
- 3b. **Illustrative EPR reactor design site layout**
4. **Landscape areas and features of national and international importance**
5. **Statutory designated nature conservation sites**
6. **Cultural heritage**
7. **Public rights of way**

Glossary of Acronyms and Abbreviations

Acronym / Abbreviation	Full term
AA	Appropriate Assessment
ALARP	As Low As Reasonably Practicable
AONB	Area of Outstanding Natural Beauty
BAT	Best Available Technique
BE	British Energy
CCW	Countryside Council for Wales
CDCZ	Construction Daily Commuting Zone
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CPA	Coastal Protection Act 1949
CRoW	Countryside and Rights of Way Act 2000
BERR	Department for Business, Enterprise and Regulatory Reform (now DECC – see below)
DCLG	Department of Communities and Local Government
DfT	Department for Transport
DECC	Department of Energy and Climate Change
EA	Environment Agency
EC	European Community
EIA	Environmental Impact Assessment
ELMR	Economic & Labour Market Review
EMR	European Marine Reserve
ES	Environmental Statement
EU	European Union
FEPA	Food and Environment Protection Act 1985
GDA	Generic Design Assessment
GW	Gigawatt (equivalent to 1,000 megawatts)
HER	Historic Environment Record
HGV	Heavy Goods Vehicle
HMSO	Her Majesty's Stationery Office
HSE	Health and Safety Executive
IAEA	International Atomic Energy Agency
IEMA	Institute of Environmental Management and Assessment
IPC	Infrastructure Planning Commission
IPPC	Integrated Pollution Prevention and Control Directive
JPO	Joint Programme Office
LPA	Local Planning Authority
MFA	Marine and Fisheries Agency
MHWS	Mean High Water Springs
MoD	Ministry of Defence
MW	Megawatt (equivalent to 1,000 kilowatts)
ND	Nuclear Directorate
NDA	Nuclear Decommissioning Authority
NE	Natural England
NIA	Noise Impact Assessment
NII	Nuclear Installations Inspectorate
NNR	National Nature Reserve
NOMIS	National Online Manpower Information Services

Acronym / Abbreviation	Full term
NPS	National Policy Statement
OCNS	Office for Civil Nuclear Security
ODPM	Office of the Deputy Prime Minister
ODZ	Operational Development Zone
ONS	Office for National Statistics
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PM10	Particulates of less than ten microns average diameter
PPC	Pollution Prevention and Control (England and Wales) Regulations 2000 (as amended)
PPS	Planning Policy Statement
RDSL	Radiological District Survey Laboratory
RSA	Radioactive Substances Act 1993
RSLR	Relative Sea Level Rise
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SMR	Sites and Monuments Record
SPA	Special Protection Area
STA	Strategic Transport Assessment
SSA	Strategic Siting Assessment
SSSI	Site of Special Scientific Interest
UK	United Kingdom
ZTV	Zone of Theoretical Visibility

1 Introduction

Background

- 1.1 In January 2009, RWE AG (RWE) and E.ON AG (E.ON) announced the creation of a joint venture (JV) to develop new nuclear power stations in the UK. Now called Horizon Nuclear Power Ltd, the JV aspires to develop at least 6 gigawatts (GW) of electricity generation on land adjacent to the existing Magnox stations at Oldbury and Wylfa. The move creates an alliance which benefits from the backing of two companies with extensive experience of operating nuclear power stations, and the resources and skills to deliver new nuclear plants. E.ON and RWE have interests in twenty three nuclear reactors in Germany and Sweden, including jointly owning three reactors in Germany.
- 1.2 In May 2009 the JV was successful in acquiring interests in land at Oldbury in South Gloucestershire and, Wylfa on Anglesey, North Wales, which was being sold for nuclear development by the Nuclear Decommissioning Authority (NDA). Preliminary site investigation work has begun at both sites as well as ecological and other survey works that would be needed to support any future planning applications for nuclear power stations on those sites. Because of the timing of the formation of the JV, early work on the Oldbury site has been led by E.ON and on the Wylfa site by RWE. This has included the production of the EIA scoping reports for the two sites.

Site Description

- 1.3 The Oldbury site is located on the eastern bank of the Severn Estuary within the administrative area of South Gloucestershire Council (Figure 1). The nearest settlements are Oldbury on Severn (and the neighbouring community of Shepperdine) and Thornbury. The site is located immediately north east of the existing Oldbury nuclear power station.
- 1.4 The land proposed for the permanent development covers an area of approximately 150ha, largely comprising mainly agricultural grassland. Other land may be required for construction, access or potential ancillary developments. Figure 2 shows the nomination and proposed permanent development boundary of the site. The nominated site boundary also includes two former silt lagoons associated with the existing power station. The Severn Estuary forms the north west boundary of the site. In addition to the existing Oldbury nuclear power station to the immediate south west of the site, there are a number of houses, farms and associated buildings to the south and north east of the site. Existing access to the site is by Shepperdine Road, a minor road connecting to Oldbury in the south and Rockhampton in the east.
- 1.5 Most of the site, and much of the surrounding area, is situated at an elevation of approximately 6.0 to 6.6m AOD. Surface drainage is achieved through an extensive network of relatively deep drainage channels which generally drain southwards towards Oldbury Pill which discharges to the Severn Estuary.
- 1.6 The north western boundary with the Severn Estuary is formed by coastal flood defence works that extend along the shore to the south west and north east. The flood defence consists of a substantial earth bund rising several metres above adjacent ground level. The bund incorporates erosion protection in the form of stone armouring on the seaward side.
- 1.7 The adjacent Oldbury nuclear power station is constructed on raised ground immediately south west of the proposed development area. It is a Magnox gas cooled reactor, with a pre-stressed concrete pressure vessel and was opened in 1967 with an output in excess of 600 MW, but presently runs at reduced capacity of 435 MW. The life of the power station has

been extended beyond the date originally set for the commencement of defuelling and decommissioning. Currently, the station is due to cease operation in 2011

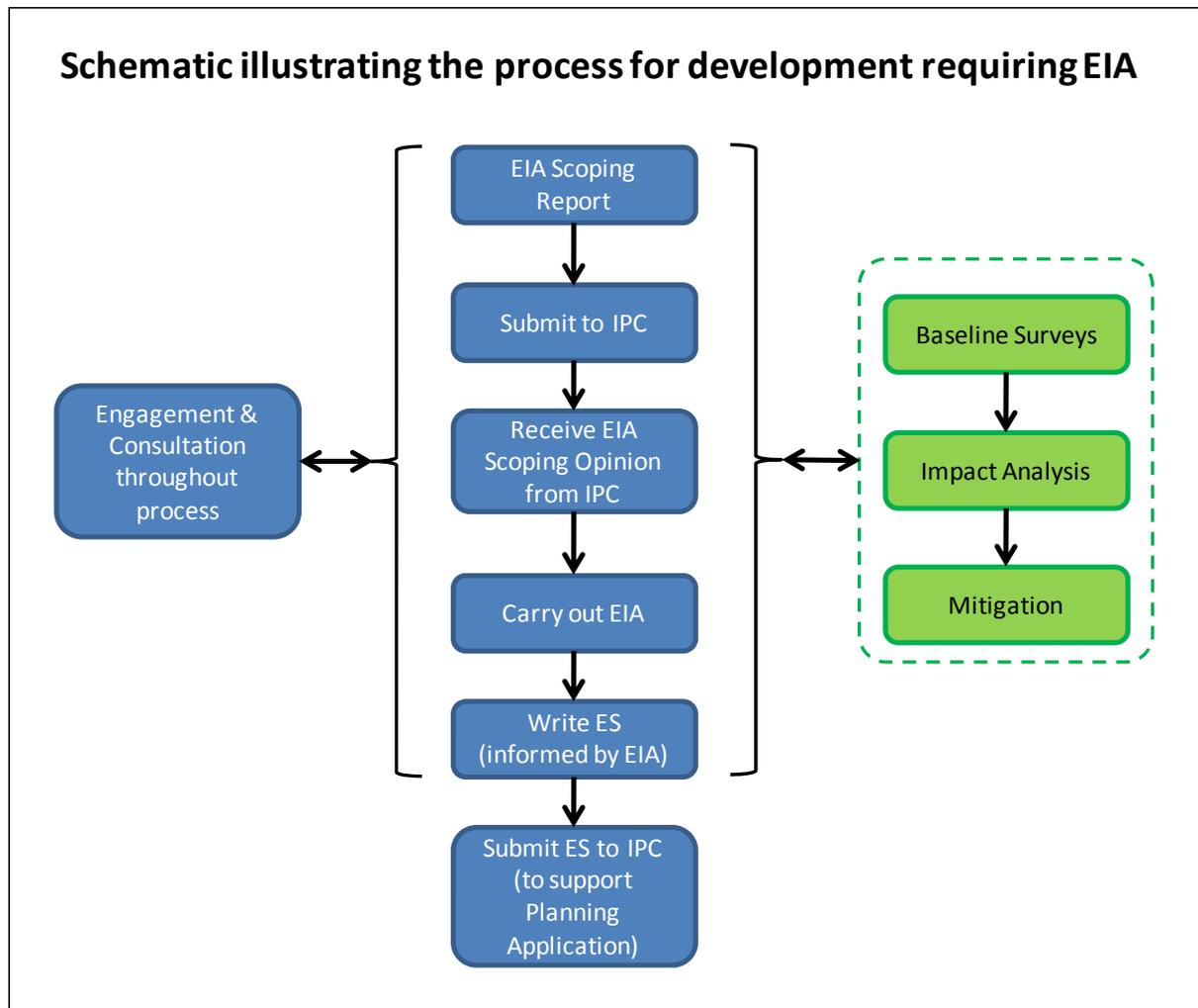
Project Outline

- 1.8 The new power station will use pressurised water reactor (PWR) technology, the same type of reactor technology as that used for the last nuclear power station built in the UK in the 1990s at Sizewell. However, at this stage, the reactor supplier, and therefore the capacity of each reactor and the exact reactor type, and the overall number of reactors, has not been determined. Two reactor vendors have submitted their reactor designs to the UK regulator for licensing under the Generic Design Assessment process (discussed below). For the purposes of this Scoping Report, the new nuclear development at Oldbury is expected to comprise the following:
- A power station comprising up to three nuclear reactors with a combined expected output of about 3300 megawatts (MW);
 - Up to four cooling towers of between 70m and 200m in height;
 - Interim waste storage facilities;
 - Electricity transmission infrastructure;
 - Access roads and highways improvements and a possible Park & Ride facility;
 - A marine off-loading facility (MOF), and other such construction transport options (subject to the outcome of a Transport Options Study)
 - Implementation of a flood defence strategy for the site (a range of options are being assessed);
 - Construction areas and facilities;
 - Ancillary development such as other buildings and infrastructure associated with the nuclear site; and
 - Landscape and biodiversity initiatives and mitigation measures associated with the construction and operation of a new power station.
- 1.9 The final choice and design of some aspects of the development may remain to be determined after planning applications have been submitted and/or through subsequent applications or conditions. Where the final choice of design has not been made, the Environmental Statement will need to consider the likely effects of more than one form of development. It is likely; however, that key decisions such as the choice of reactor type and the number of reactors will be made during 2010 before the Environmental Statement is produced.

Purpose of the Scoping Report

- 1.10 The principal aim of this Scoping Report is to provide information to the competent authorities, stakeholders and consultees to enable them to understand the characteristics of the development such that they can provide a scoping opinion for the purposes of undertaking an Environmental Impact Assessment (EIA) on the proposals. The manner in which scoping fits into the EIA process is shown in the flow diagram below.
- 1.11 There is no formal requirement in the EIA Regulations to produce a Scoping Report prior to preparing an Environmental Statement. However, Government Circular 2/99 (Ref 1) which provides guidance to local planning authorities on the implementation of EIA Directive (Ref 2) acknowledges at paragraph 82 that the role of EIA is to examine "...the main or significant environmental effects to which a development is likely to give rise".
- 1.12 The scoping of an EIA by which these main or significant effects are identified is, therefore, an important preliminary procedure, which sets the context for the study. Guidance produced by the Environment Agency (2002) (ref 3) states that:
- "Scoping is a critical stage early in the EIA process. It provides an opportunity for developers and their consultants to identify and assess the key environmental impacts and issues of concern, facilitated by thorough consultation with, amongst others, planners, statutory and non-statutory consultees, non-governmental organisations (NGOs) and the public."*
- 1.13 The scoping exercise identifies key potential environmental effects related to the proposal at an early stage, which permits subsequent work to concentrate on the relevant environmental topics.
- 1.14 This Scoping Report has been generally informed by the following:
- Desk-top studies and site visits;
 - Work undertaken to date including further survey work and the SSA nomination submission;
 - Discussions / meetings with a number of key statutory bodies who would later be responsible for commenting on the EIA as part of any future planning applications;
 - Review of relevant websites such as NDA, DECC and HSE;
 - Review of documents including planning policy, consultation papers and EIA assessment guidance;
 - Information contained within the existing Oldbury Power Station decommissioning EIA (ref 4);
 - Experience of other large infrastructure projects; and
 - Meetings with other stakeholders, including staff at the existing Oldbury Power Station.

1.15 Topic specific information sources are identified in the relevant sections of Chapter 3 of this Scoping Report.



Objectives of the Scoping Report

1.16 This scoping report has the following objectives:

- To provide a brief description of the project;
- To identify key environmental constraints and sensitivities;
- To identify the likely key impacts, both positive and negative, and to identify associated preliminary opportunities for mitigation and enhancement;
- To identify gaps in information and proposed further surveys;
- To outline the strategic background, for example proposed and existing legislation/planning guidance and required consents; and
- To identify the way forward for further stages of the EIA and the consultation process.

Scoping Report Structure

1.17 This Scoping Report includes the following sections:

Section 1: Introduction – this section, which provides background information about the proposals and the location, information on the aims and purpose of the Scoping Report, an outline of the legislative and planning context and the project team.

Section 2: Project Description – provides an outline of the proposed development.

Section 3: Approach to Assessment – A description of the proposed approach to the EIA is provided in this section. This includes details of the proposed form of the Environmental Statement (ES) and the approach to the assessment process.

Section 4: EIA Topics - The proposed scope of the EIA is set out for each of the topics identified for consideration. In general, for each topic, the existing information is summarised, potential effects and mitigation measures are set out, and the further studies and assessments required for the topic are indicated. The section is set out under the following topic headings:

- Geology, hydrogeology and soils;
- Surface water and flooding;
- Landscape and visual amenity;
- Ecology and nature conservation;
- Archaeology and cultural heritage;
- Traffic and transport;
- Air quality and dust;
- Noise and vibration;
- Public access and recreation; and
- Socio-economic

Section 5: Health, Safety and Security

Section 6: The Way Forward – describes the further steps in the EIA process, consultation procedures, and the need for appropriate assessment under the Conservation (Natural Habitats, &c.) Regulations 1994.

Strategic Context

The Need for Development

- 1.18 A large number of existing nuclear, coal and oil plants are due to close in the near future as they reach the end of their operational life and will be unable to achieve the stringent new environmental standards that are being introduced. One of the main environmental legislative drivers for coal and oil fired plants is the Large Combustion Plant Directive (LCPD) which requires large combustion plants such as power stations, to meet more stringent environmental standards by the end of 2015. If they cannot be upgraded to meet these standards they will have to close. It is predicted that 30% of existing coal and oil-fired power stations are due to close by 2015. Additionally, older, existing nuclear power stations are already closing and based on published lifetimes most will have closed by 2020 as they reach the end of their operational lives.
- 1.19 Against this backdrop of closures, the demand for electricity is expected to increase and if power plants are not replaced the UK could face a major shortfall in electricity supply post 2015. In total the UK is likely to require around 35GW of new generation capacity by 2020, equivalent to more than 30% of today's capacity.

The UK Energy Policy

- 1.20 In November 2005 the Government announced a major review of the country's energy policy. The review concluded with the publication of the 2006 Energy Review 'The Energy Challenge' (Ref 5) which set out the government's four long-term goals for energy policy:
- *to put the UK on a path to cut our carbon dioxide emissions by some 60% by about 2050, with real progress by 2020;*
 - *to maintain the reliability of energy supplies;*
 - *to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and*
 - *to ensure that every home is adequately and affordably heated.*
- 1.21 The 2006 Energy Review concluded that nuclear power will have a role in the future UK generating mix and proposed a number of initiatives to reduce the regulatory barriers for new nuclear build. In addition the Government asked the nuclear regulators (Health and Safety Executive (HSE), Environment Agency (EA), Scottish Environment Protection Agency (SEPA) and Office for Civil Nuclear Security (OCNS)) to implement a pre-authorisation system for reactor designs to allow generic designs to be assessed in advance of any application to build a nuclear power station at a particular location, (this process is known as 'Generic Design Assessment' and is discussed further below).
- 1.22 In May 2007 the Government published its Energy White Paper 'Meeting the Energy Challenge' which covered a range of energy issues and presented the Government's preliminary view on nuclear power that:
- 'it is in the public interest to give the private sector the option of investing in new nuclear power stations'* (Ref 6).
- 1.23 The Government published the consultation document, 'The Future of Nuclear Power' (Ref 7) to consult on the Government's preliminary view. In addition the consultation document invited applications from companies interested in having their nuclear power station designs assessed. Potential applicants were requested to provide a letter of endorsement from a credible nuclear power operator, stating that they would be interested in building and

operating the design in the UK. In July 2007 the Government announced that the following four reactor design companies had made valid applications:

- Atomic Energy of Canada Limited's (AECL) ACR-1000;
- AREVA and Electricité de France's (EDF) UK EPR;
- GE-Hitachi Nuclear Energy's (GEH) ESBWR; and
- Westinghouse Electric Company's (WEC) AP1000.

1.24 In August 2007, the Nuclear Regulators started the first stage in the generic design assessment process for the four designs. AECL have since withdrawn from the GDA process and GEH has temporarily suspended its involvement. The GDA process is still ongoing.

1.25 In January 2008 the Government published 'Meeting the Energy Challenge – A White Paper on Nuclear Power' (Ref 8) which concluded that:

'Nuclear power is:

- *Low-carbon – helping to minimise damaging climate change*
- *Affordable – nuclear is currently one of the cheapest low-carbon electricity generation technologies, so could help us deliver our goals cost effectively*
- *Dependable – a proven technology with modern reactors capable of producing electricity reliably*
- *Safe – backed up by a highly effective regulatory framework*
- *Capable of increasing diversity and reducing our dependence on any one technology or country for our energy or fuel supplies.*

On this basis, the Government believes that it is in the public interest that new nuclear power stations should have a role to play in this country's future energy mix alongside other low-carbon sources; that it would be in the public interest to allow energy companies the option of investing in new nuclear power stations; and that the Government should take active steps to open up the way to the construction of new nuclear power stations. It will be for energy companies to fund, develop and build new nuclear power stations in the UK, including meeting the full costs of decommissioning and their full share of waste management costs."

1.26 In July 2009 the Government published the UK Low Carbon Transition Plan: National Strategy for Climate Change and Energy (LCTP) (Ref 9) which sets out the Government's strategy for moving towards a low carbon economy. The LCTP concluded that if the UK is to become a low carbon economy, it needs to reduce carbon emissions by 80% by 2050. To achieve this nuclear power needs to be part of the UK's energy mix alongside renewable energy and coal with carbon capture and storage.

1.27 The White Paper on Nuclear Power sets out a number of actions the Government is taking to reduce regulatory and planning risks to facilitate new nuclear build. These actions include:

- Generic Design Assessment;
- Selection of strategically suitable sites;
- Financing arrangements for waste and decommissioning costs; and
- Regulatory Justification

Approach to the EIA

- 1.28 The planning system for major infrastructure projects such as power stations is in the process of reform. At present (November 2009) the proposed development would be subject to EIA under The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000 (SI 2000/1927) as amended. However, significant changes will soon be implemented under the Planning Act 2008. Under this legislation the development of a new nuclear power station will be classified as a nationally significant infrastructure project (NSIP) and will require a Development Consent Order (DCO) from a new independent Infrastructure Planning Commission (IPC). The transition to the new application system is currently due to come into force on 1 March 2010. The DCO will replace a number of consents normally required for a project of this type. A formal EIA will be required as part of the request for a DCO. The EIA will be undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations (2009) (S.I. 2009 No. 2263), which came into force on 1 October 2009. These changes are discussed in more detail below.
- 1.29 The approach to the EIA for the proposed new Oldbury nuclear power station will be designed to meet the requirements of both the current and proposed regulations. In addition, the approach will be robust in that it will specifically meet the requirements of the European Council Directive No 85/337/EEC on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) as amended.

Generic Design Assessment

- 1.30 The Government considers that action should be taken to address some of the “generic” nuclear issues before specific nuclear proposals are considered through the planning system. The Generic Design Assessment process allows safety, security and environmental implications of new power station designs to be assessed by the UK Nuclear Regulators prior to the submission of a planning application to build that design at a particular site (Ref 10). This means that when future operators apply for licenses, permits, planning permission, etc only the site specific aspects of the design need to be considered.
- 1.31 The EA and HSE are currently assessing two types of reactor technology for potential use in the UK, these are:
- AREVA’s EPR and
 - Westinghouse Electric Company’s WEC AP1000.
- 1.32 A detailed assessment of the two designs is due to be completed at the end of 2009, and following a period of public consultation in 2010 it is expected that a decision as to which designs will receive final approval will be made around 2011. If the reactor designs are judged to be satisfactory, the regulators will issue the following:
- Design Acceptance Confirmation (NII);
 - Generic Conceptual Security Plan approval (OCNS);
 - Statement of Generic Design Acceptability (EA).
- 1.33 If the regulators’ assessment of the design is generally positive, but some nuclear safety, security or environmental issues remain, or where shortfalls in information have been identified, they will be identified in the form of exclusions or caveats at the time of the public statements.
- 1.34 We have not yet finalised our technology choice for Oldbury and are currently still in discussion with potential vendors.

Strategic Siting Assessment

- 1.35 In the White Paper the Government also confirmed that it would carry out a Strategic Siting Assessment (SSA) to identify and assess the sites which are suitable for deployment of new nuclear power stations. The Government also issued a consultation document on the Strategic Siting Process and Criteria entitled *Towards a Nuclear National Policy Statement, Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK* (Ref 11), alongside which the Government also published a study of the environmental and sustainability effects of the criteria in addition to a Habitats Regulations Assessment Screening Report.
- 1.36 In January 2009 the Government published *Towards a Nuclear National Policy Statement – Government Responses to Consultations on the Strategic Siting Assessment* (DECC, 2009) (Ref 12) from which the final set of criteria for new nuclear sites was derived.
- 1.37 Table 1 below shows the proposed milestone dates for the nomination process that has been developed following the policy statement.

Table 1: Site nominations process

Date	Task
January 2009	Set the criteria for strategically suitable sites
March 31 st 2009	Developers to nominate sites
April 2009	Public have first opportunity to comment on nominations
May – Autumn 2009	Government to review comments and nominations
9 th November 2009	Draft Nuclear National Policy Statement (NPS) including list of potential sites published
November 2009 – February 2010	Full public consultation on draft NPS
Winter 2009 - 2010	Parliamentary scrutiny and finalisation of NPS. October 2009: IPC ready to accept EIA Scoping Requests and provide advice.
April 2010	Infrastructure Planning Commission ready to accept applications for Development Consent Orders (DCOs)

- 1.38 Through implementation of this process the Government's aim is that new nuclear power stations will be built by 2018.
- 1.39 The Oldbury site was nominated for new nuclear development by E.ON (and also by NDA) in March 2009 as part of this process.
- 1.40 The Planning Act 2008 establishes a new single consent regime for nationally significant infrastructure under which the Government will produce National Policy Statements (NPSs) that seek to establish the national case for infrastructure development and set the framework for decisions by the new independent Infrastructure Planning Commission (IPC). The Draft National Policy Statement for Nuclear Power Generation ('the Nuclear NPS') was published on 9th November 2009. The nuclear NPS establishes the need for nuclear power stations and provides a list of 10 sites suitable for the deployment of new nuclear development which have

been identified through the SSA process¹. The Oldbury site has been identified as a site suitable for the deployment of new nuclear power by the end of 2025.

- 1.41 The Nuclear NPS together with the Overarching Energy Infrastructure Policy NPS sets out the Government's policy on the national strategic issues which need to be taken into account when granting consent for the construction of new nuclear power stations. Additionally the Nuclear NPS will reduce the need, as far as possible, for the IPC to consider alternative sites since the suitability of alternative sites will already have been considered through the SSA process. The draft nuclear NPS is currently out for public consultation and is due to be published in spring 2010². Table 1.1 below shows the key milestone dates for the SSA nomination process.

¹ The ten sites identified as potentially suitable for the deployment of new nuclear power stations by the end of 2025 are: Bradwell, Braystones, Hartlepool, Heysham, Hinkley Point, Kirkstanton, Oldbury, Sizewell, Sellafield and Wylfa. The eleventh site nominated was Dungeness in Kent this site has not been included due to concerns relating to coastal erosion and associated flood risk.

² Further information on the draft Nuclear NPS and consultation process is available on the Department for Energy and climate Change website www.energynpsconsultation.decc.gov.uk. The consultation will close on 22 February.

Consents required

- 1.42 The primary consents that would be typically required for a new nuclear power station are summarised in Table 2 below (note: this list is not exhaustive).

Table 2: Summary of Main Regulatory Permissions Required for the Construction and Operation of a Nuclear Power Station

Consent/ Licence/ Approval	Description
Planning Consents	
Development Consent Order (DCO)	The Planning Act 2008 introduces a new development consent order (DCO) for Nationally Significant Infrastructure Projects (NSIPs). The development of a new nuclear power station is a nationally significant infrastructure project. The application for DCO will be made to the new Infrastructure Planning Commission (IPC) and the DCO will be able to grant consents required under other licensing regimes. The DCO replaces the current section 36 consenting regime under the Electricity Act 1989 for nuclear power stations.
Grid Connection	Under the current regime consent to build high voltage electricity transmission lines is obtained under Section 37 of the Electricity Act 1989. Under the Planning Act 2008, high voltage overhead lines would be permitted by the Development Consent Order from the IPC. The Act will allow any overhead line works to be granted as part of the same DCO as the generating station, although a separate DCO application could be submitted for these works by National Grid Electricity Transmission plc (NGET)
Appropriate Assessment	The Conservation (Natural Habitats, &c.) Regulations 1994, (as amended) (the Habitats Regulations) require an Appropriate Assessment to be conducted by the 'Competent Authority' before a plan or project that is likely to have a significant effect on designated or candidate Special Protection Areas (SPA) or Special Areas of Conservation (SAC), can be given consent, permission or authorisation. If the IPC is able to decide applications for DCO, it would be the Competent Authority. This is undertaken as part of the planning process.
Safety	
Nuclear Site Licence	Under the Nuclear Installations Act 1965 (NIA65) a nuclear site licence will be required from the Health and Safety Executive's (HSE's) Nuclear Installations Inspectorate (NII) for the purposes of installing or operating a nuclear reactor. The nuclear licence also covers ancillary activities such as storing nuclear fuel and the associated waste.
Environmental Effects: Radiological	
Radioactive Substances Authorisation	An authorisation under the Radioactive Substances Act 1993 (RSA93) will be required from the Environment Agency Wales for the disposal of radioactive waste. In 2010, authorisations are likely to be made as part of an Environmental Permit under the Environmental

Consent/ Licence/ Approval	Description
	Permitting Regulations (see below).
Article 37 Approval	Article 37 of the 1957 Euratom Treaty requires EU Member States to provide the European Commission (EC) with information relating to any plan for the disposal of radioactive waste to make it possible to determine whether the implementation of such plan is liable to result in the radioactive contamination of the water, soil or airspace of another Member State.
Environmental Effects: General	
Environmental Permit	An environmental permit from the Environment Agency [Wales] may also be required under the Environmental Permitting (EP) Regulations which came into force on 6 April 2008. An environmental permit would cover various matters formerly regulated by pollution, prevention and control and waste legislation. Authorisations issued under RSA93 and Water Discharge Consents are expected to become part of the EP regime in 2010.
Licence for Abstraction of Cooling Water	Under the Water Resources Act 1991 a licence is required from the Environment Agency for the abstraction of water from any source of supply.
Discharge Consent Consents	Under Section 88 of the Water Resources Act 1991 consent is required for certain discharges to water. It is anticipated that discharge consents will also become part of the EP regime in 2010.
Trade Effluent Consents	Under Section 118 of the Water Industry Act 1991 the consent of the relevant sewerage undertaker (Water Services Company) is required for the discharge of trade effluent into a public sewer.
Decommissioning	
Decommissioning Consent	Once a nuclear power station has reached the end of its operational life it must be decommissioned. Prior to decommissioning, consent must be sought under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended) (EIAD99).
Security	
Site Security Plan	The Nuclear Industries Security Regulations 2003 requires there to be a security plan approved by the Office for Civil Nuclear Security on behalf of the Secretary of State for a site licensed under the NIA.

Note to Table 2: This Table sets out the main regulatory permissions required for the construction and operation of a nuclear power station, it should be noted that a number of other consents, permits and licences and related agreements may also be required.

Financing Arrangements for Waste and Decommissioning Costs

- 1.43 In the Nuclear White Paper, the Government confirmed its commitment to put in place legislative arrangements to ensure that operators of new nuclear power stations have secure financing arrangements in place to meet the full costs of decommissioning and their full share of waste management costs (Ref 8) Clauses in the Energy Bill 2008 create the framework for this requirement. Operators are required to have a Funded Decommissioning Programme, approved by the Secretary of State, in place before construction of a new nuclear power station begins and to comply with this programme thereafter. The Funded Decommissioning Programme must include:
- Provision for the steps necessary to decommission the installation and manage and dispose of hazardous waste;
 - an estimate of the costs of taking those steps; and
 - details of any security to be provided in relation to those costs.

Regulatory Justification of Practices Involving Ionising Radiation Regulation, 2004

- 1.44 Consent must be sought under the Justification of Practices Involving Ionising Radiation Regulations 2004. The concept of regulatory justification set out in the regulations is based on the internationally accepted principle of radiological protection that no practice involving exposure to ionising radiation should be adopted unless it produces sufficient benefits to the exposed individuals or to society in general to offset any radiation detriment it may cause.
- 1.45 Guidance was published by DECC (formerly BERR) (March, 2008) setting out the process for justification from the relevant regulatory Justification Authority. In this instance, the guidance document states that the Secretary of State is envisaged to be the Justifying Authority. Developers must apply for regulatory justification for new nuclear development including sufficient information on the benefits and detriments of the development. Full details of requirements can be found in the BERR (DECC) guidance document (March, 2008).
- 1.46 In June 2008, the Nuclear Industry Association (NIA) (a trade association representing nuclear companies based in the UK) submitted a formal Justification application to the government for new nuclear power stations (Ref 13). The application sets-out in a high-level assessment how the benefits of candidate new nuclear reactor technology such as the AP1000, ESBWR or EPR outweigh any potential radiological health detriments. The application concludes that the security of supply and carbon reduction benefits of a programme of new nuclear power would far outweigh the limited potential for any health detriments.
- 1.47 In December 2008 the Government published 'The Justification of Practices Involving Ionising Radiation Regulations 2004 – Consultation on the Nuclear Industry's Association's Application to Justify New Nuclear Power Stations' (Ref ¹⁴). This consultation closed on 25 March 2009, The Government will be consulting on the Secretary of State's draft decision later in 2009, it is expected that a final decision will be made early in 2010.

2 Project Description

Introduction

- 2.1 The area included within the site nominated to the Secretary of State, as part of the government's Strategic Siting Assessment (SSA) process, for the new power station comprises approximately 150 ha of land to the north east of the existing Oldbury nuclear power station operated for the Nuclear Decommissioning Authority by the Site Licence Company Magnox North. The existing Magnox station is directly cooled using water drawn from a tidal reservoir built in the River Severn. It is anticipated that this reservoir would be re-used for the proposed new power station, although the decommissioning EIA for the existing station has assumed that this structure will be removed during the decommissioning process.
- 2.2 The main components of the power station are likely to comprise:
- reactor buildings, vent stack, safeguard buildings, turbine building, electrical and control buildings;
 - Up to four main cooling towers of between 70m and 200m in height;
 - Cooling water make-up abstraction and purge water discharge facilities and associated silt settling ponds;
 - Station auxiliaries including water treatment plant, auxiliary cooling systems, sewage treatment plant, auxiliary boiler house, administration building, visitor / training centre, maintenance and stores buildings, standby diesel generators and ancillary development;
 - Security fencing and building;
 - Interim waste storage facilities for both spent fuel and Intermediate Level Waste (ILW);
 - Construction areas and facilities;
 - Landscape and biodiversity initiatives and mitigation measures associated with the construction and operation of a new power station.
- As set out below the choice of reactor type has yet to be determined and will influence any layout. However, illustrative layouts are included in figures 3a and 3b to show how the key components for each reactor type (up to two EPR reactors and up to three AP1000 reactors) could be accommodated within the main site boundary.
- 2.3 The key elements are considered further below, and reference is made to some elements which might be outside of the main operational site.

Reactor Type

- 2.4 The choice of reactor type is the subject of ongoing environmental, safety, technical and commercial considerations by Horizon Nuclear Power as well as the Generic Design Assessment process being undertaken by the principal regulators. However, it is anticipated that the new Oldbury nuclear power station would generate around 3300MW of power from up to three Westinghouse AP1000 reactors or two Areva EPR reactors.

Cooling Water

- 2.5 The existing Magnox station is direct cooled, passing water from the Severn directly through its condensers and back to the river. The new station may have over eight times the electrical capacity of the current station. If it were direct cooled it would therefore need to abstract and discharge of the order of eight times the quantity of water to the river. The warm water discharge would impose an unacceptable heat load on the river and the estuary. A new station would therefore need to use an indirect cooling water system which would use cooling towers to cool the water circulating through the condensers. The cooling towers would reject the heat to the atmosphere, mainly by evaporative cooling. The choice of cooling tower type will be a key consideration, and a study is being undertaken which considers a range of factors including environmental impact, performance, efficiency, sustainability, technical and commercial aspects. In arriving at its findings, the study will use established principles for determining the Best Available Techniques (BAT) to be used for an industrial process when alternatives are available. It is expected that this study will focus on two main alternative types of cooling tower:
- Natural draught wet cooling towers (with a characteristic hyperbolic shape) which use evaporative cooling and a combination of natural convection and the “chimney effect”. Warm water from the power station’s condensers is sprayed down inside the lower part of the tower and is cooled by the cool air flowing upwards inside the tower, mostly by evaporative cooling. The warmed air rises, drawing in more cool air and creating a natural air flow. No fans are required in this design, and therefore no electrical power is consumed by the tower.
 - Mechanical draught cooling towers in which fans blow air in at the bottom of the tower (forced draught) or pull air through the tower (induced draught); these are shorter as they do not rely on the natural “chimney effect”. Various designs are available from simple wet towers which use evaporative cooling, to more complex “hybrid” or plume abatement towers. The latter use evaporative cooling and some “dry” cooling in radiator sections within the tower to reduce the relative humidity of the vapour plume so that under most operating conditions no plume is visible at the tower exit.
- 2.6 As the number of reactors and the reactor design have not yet been determined, the number of cooling towers and their size cannot yet be quantified. For the purposes of an initial visual assessment of the cooling towers, the Oldbury nomination submission assumed tower heights within the broad range of 70m – 200m. The final type, number and scale of cooling towers will be determined on conclusion of the BAT study and after a process of consultation.
- 2.7 Regardless of the choice of reactor type and cooling tower configuration, there would be a requirement to abstract “make-up” water from the estuary. In an indirect cooling system water is lost from the cooling tower/condenser circuit through evaporation, and a certain amount must be “purged” back to the estuary to maintain levels of dissolved salts and impurities in the system below acceptable levels. Despite the substantial increase in electrical generation, the new station would abstract less water from and discharge less water back to the Severn Estuary than the existing Magnox station.
- 2.8 It is intended that the existing tidal reservoir would be retained to supply the cooling tower make-up water via a new intake structure located somewhere in the centre of the reservoir. A new outfall to the main river channel would be built, probably located on the northern edge of the tidal reservoir.
- 2.9 Due to its strong tidal currents and the nature of the bed material, the Severn has a very high level of suspended solids. When this water is used for cooling tower make-up, the suspended solids in the water will tend to settle out on the cooling tower packing, within the cooling tower

“ponds” in the bottom of the towers, and in any other areas where the water velocities are low. Any such settlement will adversely affect the operation of the cooling system. It is therefore proposed to remove most of the suspended solids from the make-up water by a natural settling process before the make-up water is added to the circuit. It is proposed that the sludge containing the solids which have been settled out would be mixed with the cooling tower purge water and returned to the river as a continuous discharge. The material returned to the river would be the same material that had been abstracted from the river a few hours earlier. This would maintain the solids balance in the river and avoid the need to handle, treat, transport and dispose of large quantities of sediment from the river.

Connection to the National Grid

- 2.10 There are already connection agreements with National Grid Electricity Transmission Limited (NGET) to accommodate a new nuclear power station at this site, and these will be transferred to the joint venture project.
- 2.11 The existing Magnox power station is connected to the network with four 132kV circuits on two pylon lines from Iron Acton substation. The principal improvements to the electricity network infrastructure required to connect the new power station would be the replacement of the conductors and insulators on these existing four 132kV circuits with conductors and insulators suitable for operation at a higher voltage (400kV). The existing pylon towers would be used but some towers local to the station may need to be “moved” (dismantled and replaced) and a few additional pylon towers would be required to connect the existing lines to the new NGET 400kV substation at the station. The pylon lines uprated to 400kV operation will be linked to the existing National Grid 400kV network approximately 2km to the south of Iron Acton substation, to facilitate this some minor changes to existing lines in the vicinity Iron Acton substation will also be required. Wider National Grid system reinforcement works would also be required, although most of this work would go ahead irrespective of the development of a new power station at Oldbury. A new 400kV substation would be constructed by NGET at the new power station site to provide a reliable and flexible link between the transmission lines and the power station. This substation is likely to be included in the EIA process and planning application for the station.
- 2.12 The Environmental Statement will need to include a description of the proposed new transmission infrastructure and the main environmental effects will be identified in order that the cumulative and in-combination effects of the project can be taken into account. Full details of the transmission infrastructure required will, however, be brought forward by NGET and the EIA will be undertaken and included as necessary to support any application for a new nuclear development at Oldbury.

Development Boundaries

- 2.13 The area included within the site nominated to the Secretary of State comprises approximately 150 ha of land to the north east of the existing Oldbury Magnox nuclear station. The south-west portion of the site includes two silt lagoons which were used for disposal of silt dredged from the tidal reservoir during the earlier years of operation of the existing power station. The remainder of the area is primarily agricultural grassland.
- 2.14 It is intended that all activities requiring a nuclear site licence would be located within the nomination site boundary. A number of ancillary facilities and associated developments may be located on other land beyond the nomination site boundary. If successful in an application to the Infrastructure Planning Commission, a number of these ancillary facilities are likely to

be included in the Development Consent Order granted under the new planning regime, although some components of the project would require separate consents and licenses. The associated development components would be described and assessed as necessary in the Environmental Statement and are likely to include:

- access roads;
- the cooling water intakes and outfalls;
- land required for any connection infrastructure to the national grid;
- land required for coastal protection measures;
- possible creation of a marine offloading facility (MOF);
- land that may be required for other transport options such as highways infrastructure and improvements;
- land that may be required for a possible Park & Ride facility (near to the M5 for example);
- additional land required for construction lay down areas, construction access and/or temporary accommodation for construction workers;
- land required for landscape provisions; and
- any land required for ecological mitigation or enhancement.

Access

- 2.15 There is generally good access to the site from the M5 motorway that runs to the east. Access from the M5 is likely to be from Junction 14 near Wootton-under-Edge. The road as far as the existing power station site is potentially sufficient for construction access, although would need further detailed study. A new access route from the existing power station site access road would probably be required.
- 2.16 Large items of plant and equipment for the new power station may need to be brought in by sea and this may also be preferable for bulk materials. In this case it is envisaged that a new marine offloading facility (MOF) would be required.
- 2.17 The EIA will assess off-site impacts that would arise either directly or indirectly from access provision. These may include road and roundabout layouts, signalling and junction modification where required.

Radioactive Waste Storage

- 2.18 Radioactive waste will be produced by activities associated with operating and maintaining the reactor units, and ultimately, from decommissioning the plant.
- 2.19 Wastes will be managed in accordance with the waste hierarchy. Opportunities for waste minimisation, characterisation, segregation and treatment will be considered in all stages of waste management.
- 2.20 Intermediate Level Wastes (ILW) will be stored on site until a final disposal site for ILW becomes available in the UK. As part of the Government's Managing Radioactive Waste Safely (MRWS) programme, a White Paper was issued in June 2008 setting out a framework for implementing geological disposal of the UK's higher activity radioactive waste (Ref 15). The higher activity wastes to be managed in the long-term through geological disposal include: High Level Waste (HLW); Intermediate Level Waste (ILW) and a small fraction of Low

Level Waste (LLW) which is unsuitable for near-surface disposal. In addition the Committee on Radioactive Waste Management (CoRWM) have recommended to the Government that spent fuel should be declared a waste and managed through geological disposal (Ref 16). The Government has made the Nuclear Decommissioning Authority (NDA) the implementing organisation, responsible for planning and delivering the geological disposal facility.

- 2.21 ILW and spent fuel will therefore be stored on site in the interim in dedicated safe and secure buildings pending final disposal to a newly available deep geological repository. Waste storage buildings are typically designed to provide a service life of over 100 years.
- 2.22 LLW will also be produced during the operation and decommissioning of the power station. Short term interim storage will be provided for LLW prior to disposal to the existing Low-Level Waste Repository near Drigg in Cumbria or a successor national repository.
- 2.23 The Environmental Statement will provide a description of the regulatory controls on radioactive waste management, radioactive discharges to the environment and set out estimates of the radiation doses that may be received by members of the public (both individually and collectively). The estimated doses will be explained by reference to legal limits, the doses incurred from natural radiation, the doses received during activities such as air travel, and the doses that may be received from medical diagnosis or treatment.

Alternatives

- 2.24 Development of the design of the proposed new power station will involve consideration of alternative layouts, approaches and technical solutions (e.g. different cooling system options are being considered now). As required by the EIA regulations, the main alternatives considered will be described in the Environmental Statement.

Outline of Construction Activities

- 2.25 Construction of the site will be divided into three main phases:
- Site preparation activities and preliminary works (including upgrading of existing infrastructure, earthworks, site levelling, excavation of the main deep foundations, construction of site drainage network etc);
 - Construction and erection of the main buildings and ancillary buildings (including cooling water intake and outtake structures construction) and landscaping works; and
 - Commissioning tests until commercial operation.
- 2.26 The construction and commissioning phases of the power station are expected to last around 9 years. Eighteen months to three years may be necessary for the site preparation, whilst the construction of the buildings and the commissioning tests phases may take up to six years.
- 2.27 The construction methodologies for the two reactor designs are different and hence workforce numbers will vary depending on the construction approach. For example construction of the AP1000 involves modular construction techniques, with fabrication works taking place off site and therefore requires lower workforce numbers than the UK EPR which utilises a more traditional 'stick build' approach.
- 2.28 The main construction and civil engineering work will be supplemented by activities involving trades e.g. metallic carpentry, roof cladding, leak tightness, masonry and rendering, painting, and lifts and hoists.

- 2.29 Over the construction period it is likely that between 3000 to 6000 jobs will be created with a potential peak workforce of up to 6000 for two reactors.

Operational and decommissioning timescales

- 2.30 It is anticipated that the new power station would be operational for 60 years and is expected to generate around 800 permanent jobs. In addition during periods of outage maintenance workforce numbers can be expected to increase by up to 1000 or 1,300 for a 10 year outage.
- 2.31 Decommissioning of the power station is estimated to last for approximately 20 years.

3 Approach to the EIA

Introduction

- 3.1 A description of the proposed approach to the EIA is provided in this section. This includes details of the proposed form of the Environmental Statement (ES) and the approach to the assessment process.
- 3.2 The following key elements of the proposed approach to the EIA are described in this section:
- EIA Guidance;
 - Scheme Description;
 - Alternatives;
 - Baseline;
 - Assessment of Effects;
 - Form of the Environmental Statement; and
 - Relationship of Environmental Statement with Other Supporting Documents.
- 3.3 Topic specific assessment methodologies and are described in Chapter 4.

EIA Guidance

- 3.4 Guidance on implementing the UK's EIA Regulations is provided in DETR Circular 02/99 Environmental Impact Assessment and also in the DETR's Environmental Impact Assessment: A Guide to the Procedures, 2000. This general guidance will be taken into account in undertaking the EIA. The DoE's guidance of 1995, Preparation of Environmental Statements for Planning Projects that Require Environmental Assessment, includes guidance on specific topics that will also be used.
- 3.5 More recently the Department for Communities and Local Government has published the following documents for consultation:
- Department for Communities and Local Government, 2006, Environmental Impact Assessment: A Guide to Good Practice and Procedures. (Ref 17)
- 3.6 Whilst these are still draft documents, they represent more recent thinking that will also be taken into account where appropriate.
- 3.7 Of specific relevance to this project under the current regime, BERR (now DECC) has published:
- Guidance on the Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000, Urn 01/789, September 2000.
- 3.8 Further guidance may be forthcoming in due course on the Infrastructure Planning (Environmental Impact Assessment) Regulations (2009). Draft guidance has already been provided on pre-application procedures under the Planning Act 2008, some of which is also relevant to EIA.
- 3.9 The above guidance and any other guidance that is forthcoming on procedures under the Planning Act 2008 will be taken into account as appropriate.

Project Description

- 3.10 The project to be assessed by the EIA will be described within the ES. The Infrastructure Planning (Environmental Impact Assessment) Regulations (2009) require the Environmental Statement to include, insofar as is reasonably required to assess the environmental effects of the development and which the applicant can reasonably be required to compile:

‘1. Description of the development, including in particular—

- (a) a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases;*
 - (b) a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;*
 - (c) an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc) resulting from the operation of the proposed development.’*
- 3.11 The EIA Regulations also require:
- “5. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.”*
- 3.12 An outline of the principal processes and the main effects that are known with respect to decommissioning will also be provided. Decommissioning is the subject of a separate consent regime which also requires environmental impact assessment and full details of the decommissioning process are currently not known. The ES for the new build project will therefore not provide a detailed assessment of the environmental effects of decommissioning but will summarise the likely effects and highlight any major differences between alternative reactor designs where known.

Alternatives

- 3.13 The EIA Regulations require for inclusion in an Environmental Statement:
- “An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant’s choice, taking into account environmental effects.”*
- 3.14 The ES will therefore outline the main alternatives considered. It will not be the purpose of this section to justify the decision to bring forward a scheme for a nuclear power station as the conditions which have led the applicant to do so have been established in the 2008 White Paper on nuclear power. Alternative layouts, building forms, and means of access that have been considered by the applicant will also be described.

Baseline

- 3.15 The baseline of the site and its environs form the basis of the assessment for the EIA, enabling the likely significant effects to be identified and assessed through comparison with the baseline. This baseline for the assessment should represent the conditions that will exist in the absence of the project at the time that the project is likely to be implemented, or when the effects being assessed are likely to arise. For the purposes of this Scoping Report, it is assumed that the main construction activities would commence over the period 2013 to 2014.

An appropriate baseline for the assessment of most of the likely significant environmental effects of the project would therefore be 2013.

- 3.16 For practical purposes it is most likely that environmental conditions in 2013/2014 will similar to the existing conditions. The baseline for the assessment of environmental effects will, therefore, mostly be drawn from existing conditions during the main period of the EIA work in 2010/2011 but these will be examined to identify any likely changes between now and the future baseline for the implementation of the project. This would take account of any other major projects that have been granted planning permission but not yet built or operational, and any changes to the planned decommissioning of the existing Oldbury nuclear power station that will be altered by the new build programme.
- 3.17 Agreement on a list of such projects would be sought with the relevant local authorities.
- 3.18 The approach to obtaining the necessary baseline information is set out for the individual topics in Chapter 4.

Assessment of Effects

- 3.19 The EIA Regulations require the identification of the likely significant effects of the project on the environment. The general approach to the identification of effects and assessment of their significance is set out below.

Sensitivity or Importance of Receptors

- 3.20 Receptors are defined as the physical or biological resource or user group that would be affected. The baseline studies will identify potential environmental receptors for each topic. Some receptors will be more sensitive to certain environmental effects than others. The sensitivity or importance of a receptor may depend, for example, on its frequency or extent of occurrence at an international, national, regional or local level.

Description of Effect

- 3.21 For each topic, the likely environmental effects will be identified. Effects will be either adverse or beneficial. Effects will be divided into those confined to the construction phase and those occurring during operation of the power station.

Significance of Effects

- 3.22 The magnitude of an effect does not necessarily directly relate to its significance since the significance of the effect depends on both its magnitude and the sensitivity or importance of the receptor. For example, a significant effect may arise as a result of a relatively modest effect on a resource of national value, or a large effect on a resource of local value.
- 3.23 The significance of an effect would generally take into account the following criteria:
- extent and magnitude;
 - duration (short-term and long-term);
 - reversibility and irreversibility;
 - performance against environmental quality standards; and
 - sensitivity or importance of the receptor.
- 3.24 Levels of significance that would be used in the assessment are, in descending order:
- Major;

- Moderate;
- Minor;
- Negligible.

3.25 All levels of significance apply to both adverse and beneficial effects. These significance levels would be defined separately for each topic. In all cases, the judgement made as to significance would be that of the author of the relevant chapter with reference to appropriate standards/guidelines where relevant.

Mitigation Measures

3.26 The project will include a range of measures designed to avoid or reduce the magnitude of potential adverse environmental effects. The assessment of effects will take into account all measures that form part of the project and to which there is clear commitment.

3.27 It may be appropriate in some instances to identify 'further mitigation measures'. These are measures that could also prevent, reduce and where possible offset any adverse effects on the environment but are not part of the assessed project.

3.28 Measures may also be proposed which would deliver a degree of environmental enhancement. These would also be described.

Summary tables

3.29 Summary tables would be used to summarise the effects of the project for each environmental topic during construction, operation and decommissioning.

Inter-relationships between topics

3.30 There will be inter-relationships between topics that lead to environmental effects. For example, changes in traffic flows may lead to changes in local air quality and noise. This in turn may have effects on wildlife or local residents. Identification of such effects is an inherent part of the EIA process, but where specific interrelationships are of particular significance, these will be described.

In combination and cumulative effects with other developments

3.31 The effects of the project together with other developments planned in the area will be considered in each topic chapter. Information on other developments in the area will be requested from the local planning authorities. Such other developments considered in the cumulative effects assessment will include those that have planning permission, those where applications have been submitted and are considered likely to be approved in the near future, and other projects planned in the area (such as those for which development briefs have been adopted in order to encourage a specific type of development at a particular site and sites allocated in local plans). The scope of the cumulative effects assessment will be agreed with the local planning authorities.

3.32 Projects which have already been identified as being likely to require consideration in combination with the proposed Oldbury power station include the decommissioning of the existing Oldbury nuclear power station, and the emerging proposals for tidal power generation in the Severn Estuary.

3.33 Gloucestershire County Council has published the Evidence Gathering/Baseline Report for the Habitats Regulations Assessment of the Gloucestershire Minerals and Waste Development Framework (Gloucestershire County Council, 2009). This identifies a list of plans and projects which may be relevant to consideration of potential in combination effects on the Severn Estuary. The assessment of cumulative impacts will have regard to the

evidence base that has already been development for this and other development plans and projects in the area.

- 3.34 The assessment of in combination effects cannot be exhaustive and it is important that the list of other plans and projects to be considered is workable. The scope of the in combination effects assessment will be agreed with the local planning authorities to ensure that it includes all relevant plans and projects where there is the likelihood that such effects could be significant.

Form of the Environmental Statement

- 3.35 The Environmental Statement (ES) would be structured to allow all relevant environmental information to be readily accessible. It is anticipated that the first section of the ES would contain the introductory chapters relating to the project as a whole. These would include the description of the project, the main alternatives considered during the evolution of the project and the reasons for the choices made, and the construction process and programme. Information relating to the scoping and consultation process together with the methodology adopted for the EIA would also be provided.
- 3.36 It is anticipated that the next section of the ES would then comprise the individual topic chapters. Each topic chapter would describe the baseline situation, identify the potential effects of the development, set out the proposed means for avoidance and/or mitigation, describe any enhancement measures proposed, and assess the significance of the effects.
- 3.37 The effects of potential radioactive discharges will be fully considered through the Generic Design Assessment and subsequent site licensing and environmental permitting processes. However, the ES will also consider any radioactive discharges to water, air and land where appropriate.

4 EIA Topics

Introduction

- 4.1 It is proposed that the following environmental topics be addressed in the EIA and reported in the ES:
- Geology, hydrogeology and soils;
 - Surface water and flooding;
 - Landscape and visual amenity;
 - Ecology and nature conservation;
 - Archaeology and cultural heritage;
 - Traffic and transport;
 - Noise and vibration;
 - Air quality and dust;
 - Public access and recreation; and
 - Socio-economics.
- 4.2 It is not necessary to include chapters on Planning Policy Context and Sustainability in the Environmental Statement. This accords with the consultation paper on EIA from the Department for Communities and Local Government “EIA: A Guide to Good Practice and Procedures” June 2006 which explains (paragraph 155) that there is no requirement to provide chapters on planning and sustainability in Environmental Statements. It is envisaged that a separate Explanatory Statement will be submitted with the planning application and the environmental topic chapters within the Environmental Statement will each set out the policy context relevant to that topic. A Separate Sustainability Statement and a Waste Management Strategy may be submitted and any sustainability measures proposed as part of the project would be set out in the project description and assessed for their environmental effects.
- 4.3 For each of the topics identified in paragraph 4.1 the proposed scope of the EIA is set out below. In general, for each topic, the existing information is summarised, potential effects and mitigation measures are set out, and the further studies and assessments required for the topic are indicated.
- 4.4 For some topics, principally landscape and visual amenity, ecology and nature conservation, and surface water and flooding, preliminary surveys and assessments have been carried out to provide information to support the nomination of the site for the Government’s Strategic Siting Assessment. Some ecological surveys have also been carried out because of seasonal constraints. The information obtained is summarised in the respective topic sections of this chapter.

Geology, Hydrogeology and Soils

Existing Situation

Solid Geology

- 4.5 The British Geological Survey (BGS) map (Sheet 250) shows the area around Oldbury to be underlain by rocks of Triassic age. Around Oldbury, in the Vale of Berkeley, these rocks consist mainly of the Mercia Mudstone Group (formerly known as Keuper Marl). These rocks are described by the BGS as comprising red and chocolate-coloured siltstones and mudstones.

Superficial Geology

- 4.6 Much of the solid geology is overlain by thick estuarine alluvial deposits of Quaternary age. The alluvium comprises soft blue/grey clay extending over 10 km to both the north and south west of the Oldbury area. The alluvium is expected to be approximately 4m thick at the Oldbury site.

Soils

- 4.7 The Soil Survey of England and Wales (Sheet 5 South West England) maps the soils at the site as Newchurch 2 soil association. These are stoneless loamy and clayey soils developed in marine alluvium of coastal flats with naturally high groundwater. The Ministry of Agriculture Fisheries and Food Agricultural Land Classification Map produced at a scale of 1:63,360 shows the site as ALC Grade 3.

Surface Water

- 4.8 The site is bordered to the west by the River Severn, which has been engineered to provide tidal lagoon storage for the existing Oldbury power station. The River Severn is anticipated to be the primary surface water receptor for surface water and shallow groundwater flowing from the site.

Hydrogeology

- 4.9 There is a multi-aquifer system below the Oldbury area. The alluvium is classified as a non-aquifer by the Environment Agency. The groundwater vulnerability map (Sheet 37) classifies the site as being on a non-aquifer of negligible permeability.
- 4.10 The Oldbury Magnox Decommissioning Report states that 'the solid strata beneath the Oldbury site comprise a multi-aquifer system. The estuarine alluvium around the site is classified on the National Rivers Authority Groundwater Vulnerability Map (Reference 7) as a 'non-aquifer' and is not extensively used for potable supplies (see paragraphs 13.53-13.54 for details on abstractions). It may contain small volumes of perched water locally, but this is not considered likely to be significant. The underlying Mercia Mudstone Group and Old Red Sandstone are both classified on the National Rivers Authority (NRA) Groundwater Vulnerability Map as 'minor-aquifers'. The Mercia Mudstone at Oldbury is not characteristic of the formation in general. The leached sandstone horizons can transmit significant volumes of water through laterally continuous cavities. These cavities are largely within the sandstone bands, with leaching from the siltstones generally resulting in a reduction in strength' (chapter 13, paragraphs 13.34 – 13.37).
- 4.11 Previous studies at the Oldbury power station suggest that the whole area is underlain by gravelly, seasonally wet, clay. This material is likely to have low permeability. The gravel component of the clay will affect permeability; however previous reports suggest the clay content to be high resulting in a limited permeability. This will tend to limit but not preclude recharge to the more permeable strata of the underlying Mercia Mudstone Group.

4.12 The site does not lie within a groundwater Source Protection Zone (SPZ) for potable water supply.

Ground Contamination

4.13 Historical desk studies and previous limited intrusive investigations have not revealed any significant soil contamination issues. Sediments within the tidal lagoon may be contaminated by heavy metals and other contaminants as a result of historic industrial activity in the Severn catchment. The two former silt lagoons (Nos. 1 and 2) located to the north of the Oldbury Magnox power station also have the potential for such contamination.

Potential Effects and Mitigation

4.14 Potential effects related to ground conditions and groundwater include:-

- Reduction in recharge volumes:
 - The construction of buildings, together with the provision of impervious hardstanding areas has the potential to result in a significant increase in run-off from the application site into the surface water drainage system. This may result in a reduction in groundwater recharge.
- Effects on surface water and groundwater quality;
- Effects on agricultural soils; and
- Effects arising from contaminated soils.

Further Studies and Assessment

4.15 A comprehensive assessment of baseline conditions and impacts on the ground conditions and hydrogeological regimes will be undertaken. The scope and methodology for the assessment will be developed in consultation with the Environment Agency.

4.16 The effects of the proposed development on hydrogeology will be addressed as part of the EIA process, and include the potential effects of both the construction and operational phases of the development.

4.17 Assessment of the hydromorphological aspects of the Water Framework Directive will be captured through the coastal processes assessments, including the potential for effects to arise from the installation of structures within the transitional water (estuary) water body as part of the proposed development scheme. This will include consideration of the cooling water intake and outfall structures and the development of a marine off-loading facility if required.

4.18 An assessment of the depths of topsoil and subsoil resources on the site would be carried out through a reconnaissance survey of soil types. This will enable a soil management strategy to be produced.

4.19 When considering the potential for land contamination, the focus will be on contamination risks from former and/or proposed uses and activities, and/or the migration of contaminants from surrounding land uses including the adjoining existing nuclear power station.

4.20 The current guidance on the identification and remediation of land likely to be contaminated is set out in Annex 2 – Development on land affected by contamination - in Planning Policy Statement (PPS) 23: Planning and Pollution Control. This adopts a risk based approach in line with Environment Agency 'model procedures' (the Model Procedures for the Management of Land Contamination, CLR 11), and requires a risk assessment of contaminated land to be undertaken. This risk assessment must, at the very least, comprise a desk based assessment (DBA) and site walkover.

- 4.21 The new Soil Strategy for England – Safeguarding our Soils – outlines the Government’s approach to safeguarding soils for the long term. This encourages better management of soils during the construction process to prevent pollution and unnecessary compaction. Alongside the strategy the emerging guidance with regard to the identification and use of soil materials on site is contained in the Consultation on the Code for the Sustainable Use of Soils on Construction Sites, published by DEFRA in July 2008. This document contains guidance on how to assess soil materials and incorporate this information into an overall draft soil management strategy for proposed development sites.

Surface Water and Flooding

- 4.22 All new developments in England, including infrastructure such as new nuclear power stations, must take due account of the policies set out in Planning Policy Statement 25 (PPS25). This sets out how flood risk should be considered in making planning decisions. The aim is to make development safe without increasing flood risk elsewhere and, where possible, to reduce flood risk overall. As required by PPS25, a Flood Risk Assessment of the project will be undertaken.
- 4.23 Two aspects of flooding will be considered in assessing the effects of the proposed new power station. These are:
- the possible threats to the safety of a new nuclear power station in an area exposed to flood risk; and
 - the potential effects of flood protection measures on areas surrounding the proposed power station site.
- 4.24 Flooding may arise from rivers and the sea (including storm surges), directly from rainfall on the ground surface and from rising groundwater, overwhelmed sewers and drainage systems and other sources and such sources may occur in parallel (and the potential combined effect will be assessed).
- 4.25 It is important to make allowances for the effects of climate change over the planned lifetime of the proposed power station. Consideration must be given to practical options for minimising flood risk, and any mitigation measures necessary to reduce any risk to an acceptable level.
- 4.26 The lifetime of the station needs to include for the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from eventual decommissioning for at least 100 years until it can be sent for disposal in a geological disposal facility.

Existing Situation

- 4.27 The site and surrounding area is designated as Flood Zone 3 on published Environment Agency flood zone maps. The area is therefore considered to be at high risk of flooding with a statistical flood risk of greater than or equal to 1% for fluvial flooding and/or 0.5% for coastal and tidal flooding.
- 4.28 With regard to flood risk, the standard of protection required for general industrial development is typically 1 in 100 (1% probability) years for fluvial flooding and 1 in 200 (0.5% probability) years for tidal flooding. For nuclear installations the industry standard is to design in relation to the 1 in 10,000 years (0.01% probability) standard of flood protection.
- 4.29 The site is not located in the fluvial flood zone of any major surface watercourse other than the River Severn/Severn Estuary. Water levels in the Severn Estuary adjacent to the site are controlled by tidal variation rather than by fluvial flood levels in the river channel upstream.
- 4.30 The site and surrounding area is known to experience frequent low level flooding due to inadequate capacity in the existing field drainage systems. Through appropriate design of surface water management systems for the proposed development there is potential to improve surface water management in the surrounding area.

Potential Effects and Mitigation

- 4.31 The potential effects and mitigation measures identified are:
- Flood protection measures;

- Implications for protection measures on other designated areas and for the flood risk in other areas in regard to development of a new nuclear station; and
- Potential for flooding to impede operational and emergency access to site.

The Severn Barrage

4.32 The Government is undertaking consultation on the feasibility of tidal power generation in the Severn. Some of the options would incorporate the construction of new structures, i.e. barrage, reef, fence, etc., across the Severn Estuary at locations downstream of Oldbury. On the basis of currently available information it is understood that the potential impact of such schemes would be to reduce the upstream tidal range whilst providing a degree of protection against tidal storm surges. Although development of new structures across the estuary is unlikely to have any beneficial impact on flood risk related to extreme climatic events such as the 1 in 10,000 year design flood applicable to nuclear installations, there is currently no evidence to indicate that there would be any adverse impact on tidal flood risk at Oldbury.

Further Studies and Assessment

- 4.33 Following the review of the potential flood hazard and its implications for the proposed Oldbury site which has formed the basis for the account of the existing conditions and potential effects and mitigation set out above, a full and detailed Flood Risk Assessment of the project would be undertaken in accordance with the requirements of PPS25.
- 4.34 This will provide a detailed assessment of the potential for flooding of the site from all relevant sources. It will also make allowances for the effects of climate change over the planned lifetime of the proposed power station. Full consideration will be given to practical options for minimising flood risk, and any mitigation measures necessary in order to reduce any risk to an acceptable level.
- 4.35 It is anticipated that the Flood Risk Assessment will be supported by detailed hydraulic modeling studies associated with both tidal flood risk and the local surface water drainage network.
- 4.36 It should be noted however that the detail of appropriate flood risk measures and the further work needed to support this will be subject to further discussion and agreement with the Environment Agency and Nuclear Installations Inspectorate, amongst others.

Landscape and Visual Amenity

- 4.37 The proposed new power station would be located adjacent to the existing Oldbury power station, which is one of a series of industrial developments located along the Severn Estuary. The proposed power station site is not part of or adjacent to a designated landscape. As explained in Chapter 2 of this Scoping Report, the proposed power station would include substantial built structures, including cooling towers of up to 200m in height. Although the number, type and height of cooling towers will be determined for the completion of the Environmental Statement, at this stage, for the purpose of this Scoping Report, a range of cooling tower heights has been taken into account.
- 4.38 Current methodology for assessment of effects on landscape and visual resources in the UK is founded on guidance and techniques published by the Landscape Institute/Institute of Environmental Management and Assessment and the Countryside Agency/Scottish Natural Heritage. In Wales guidance on landscape assessment is published by the Countryside Council for Wales (CCW).
- 4.39 There are no definitive recommendations within the 'Guidelines for Landscape and Visual Impact Assessment' (Second Edition) published by the Landscape Institute and Institute of Environmental Management and Assessment regarding extent of study areas or distance thresholds for survey and assessment purposes. The guidelines state that a zone of theoretical visibility (ZTV) should be used as the basis to determine a study area, to ensure all potential receptors are identified and assessed. A 35km radius study area has therefore been chosen based on guidelines within Scottish Natural Heritage's 'Visual Representation of Windfarms: Good Practice Guidance' (2006), which is currently the only document providing any guidance on the extent of ZTVs for tall developments.

Existing Situation

- 4.40 Within the 35km study area there are a number of designated landscapes and different landscape and seascape character areas or units (see Figure 4). International and national designated landscapes within the 35km radius study area include the Blaenavon World Heritage site, the City of Bath World Heritage Site, the Brecon Beacons National Park, the Wye Valley Area of Outstanding Natural Beauty (AONB), the Cotswolds AONB and the Mendip Hills AONB.
- 4.41 Relevant regional and locally designated landscapes will also be identified.

Landscape Character

- 4.42 The site lies within the Severn and Avon Vales (Area 106). It is overlooked by The Forest of Dean and Lower Wye (Area 105) to the west and Cotswolds (Area 107) and Bristol, Avon Valleys and Ridges (Area 118) to the east. These character areas include extensive Areas of Outstanding Natural Beauty. The character area in which the site is located comprises small scale pastureland enclosed with good quality hedgerows, often with stone gateways and occasional Cotswold stone walls. The hedgerows contain regular mature hedgerow trees (oak/ash/willow). The area is interspersed by small farmsteads and villages with many old stone buildings and it is accessed by a series of narrow winding lanes. Large ditches and banks are evident together with ridge and furrow in the fields denoting historical land drainage. The wide Severn valley is framed by the Cotswold Hills to the east and the Wye Valley and Forest of Dean to the west with occasional knolls or local hills and wooded copses. The existing power station interrupts this pattern being larger in scale and mass than surrounding landscape features. Lines of power cables and pylons are visible.

Estuarine/river character:

- 4.43 The River Severn estuary is quite wide and shallow with mudflats and tidal salt marshes at its edges. The slender forms of the two River Severn bridges are features. The river is bordered on both banks by pasture and arable land. There is good public access by foot along the Severn Way on the southern side and poor access on the northern side, the A48 being the main access route set back from the coast.

Potential Effects and Mitigation

- 4.44 The development of a nuclear power station at Oldbury has the potential to affect the existing landscape and visual resources of the site and surrounding area. The significance of the effects on these resources will depend on the type of reactor and associated cooling systems chosen and other mitigation measures put in place.
- 4.45 Current guidance advises that landscape and visual effects be assessed separately through a closely linked procedure. The following distinction should be drawn between landscape and visual effects:
- Landscape effects relate to the effects of the proposals on the physical and other characteristics of the landscape and its resulting character, quality and value.
 - Visual effects relate to the effects on views experienced by visual receptors (e.g. residents, footpath users, tourists etc) and on the visual amenity experienced by those people.
- 4.46 A computer generated model of the Zone of Theoretical Visibility (ZTV) has been prepared for the Oldbury site extending to 35km from the site and is illustrated on Figure 4. The ZTV was generated using a typical height of a reactor building (70m) above ground level and the existing topography of the land. It does not take account of significant areas of existing development or vegetation which might reduce the actual area of visibility. For the purpose of Scoping the ZTV takes into account the 70m – 200m range of potential cooling tower heights described in Chapter 2. As the ZTV for a 70m tower is the same as the reactor building, the additional ZTV for a 200m cooling tower is illustrated in a lighter pink on Figure 4
- 4.47 Due to the likely extent of the ZTV, it will be impossible to assess the visual impact on every individual visual receptor within the ZTV of the scheme. Consequently, key viewpoints looking towards the proposals will be agreed with statutory consultees in both England and Wales. These viewpoints will be representative of potentially sensitive residential, recreational and historic receptors situated within the study area at different distances and directions from the scheme, such as residential properties, public footpaths, roads and popular tourist attractions and vantage points (including those located in designated areas). The representative viewpoints will be used to assess the potential visual impacts of the proposals on the different range of views and settings towards the site.
- 4.48 The development of the nuclear power station proposals and the EIA is an iterative process and appropriate mitigation will be incorporated into the design through this process. Information relating to sensitive landscape and heritage features and visual receptors will be used to refine the detailed design of the project, and mitigation measures will be developed in tandem with the layout to minimise potential adverse effects. Options for screening various components of the scheme will be investigated and adopted as mitigation measures where feasible. Mitigation proposals will be appropriately described in the ES and accompanying Design and Access Statement.

Further Studies and Assessment

- 4.49 The proposed nuclear power station at Oldbury will not directly affect the form or fabric of any designated landscape. However, it will affect views from designated landscapes, including nationally designated sites, primarily the the Cotswolds AONB. It will also affect views from the Wye Valley AONB and Welsh Historic Landscape Areas nos. 17 Gwastadeddau Gwent and 18 Pen Isaf Dyffryn Gwy, but to a lesser extent. It could possibly affect views from the World Heritage Site at Blaenavon and the Brecon Beacons National Park.
- 4.50 In order to establish the significance of effects on these landscapes, and other receptors, the landscape (including seascape) character and visual resources will be investigated further and the potential for mitigating the effects explored.
- 4.51 Valued landscape and visual resources will be identified at international, national and local levels. The relevant Development Plans will be appraised.
- 4.52 This work will be carried out in consultation with appropriate statutory and non-statutory consultees, including Natural England, English Heritage, Cadw, the Countryside Council for Wales, South Gloucestershire Council and adjacent local authorities, AONB Conservation Boards and the Brecon Beacons National Park Authority.

Ecology and Nature Conservation

Introduction

- 4.53 The site for the proposed Oldbury Nuclear Power Station is located adjacent to the Severn Estuary. It also includes the existing tidal reservoir associated with the existing power station. The Severn Estuary is of considerable nature conservation importance because of its immense tidal range (more than 12m at Avonmouth during spring tides) which results in a large intertidal zone amounting to about 22,000 ha, one of the most extensive intertidal areas in Britain.
- 4.54 The estuary supports an internationally important assemblage of wintering waterfowl, and winter populations of individual bird species of international importance.

Existing Situation

Main Habitats

- 4.55 The site is predominantly agricultural land, largely improved grassland with some arable. The fields are separated by a network of hedgerows, some with mature trees. Many of the field boundaries have accompanying rhines (drainage ditches). Ponds are scattered throughout the site. There are also areas of semi-improved neutral grassland, dense scrub, tall ruderal vegetation, swamp, semi-natural broadleaved woodland, and planted broadleaved woodland.
- 4.56 The tidal reservoir to the west of the existing power station is bordered by natural rock reinforced by an artificial sea wall. Beyond the reservoir are rock outcrops (e.g. High Heron Rock and Count Rock). There are extensive intertidal mudflats and a narrow strip of saltmarsh.
- 4.57 The estuary contains a variety of intertidal habitats, which makes it one of the largest and most important intertidal areas in Britain. Areas of saltmarsh fringe the estuary.

Designated Sites

- 4.58 Statutory sites of international and national nature conservation importance in the vicinity of the Oldbury site are shown on Figure 5. The Severn Estuary is a Special Protection Area (SPA) designated for its wintering birds and a Ramsar Site for its birds, and also estuarine habitats, invertebrate communities and fish. It is also in the process of designation as a Special Area of Conservation (SAC – currently a Site of Community Importance (SCI) pending full designation). The basis of this designation is estuarine habitats and fish (specifically Sea lamprey, River lamprey and Twaite shad). It is also a Site of Special Scientific Interest (SSSI) designated for its estuarine geomorphology and habitats, internationally important populations of waterfowl; invertebrate populations of considerable interest; and large populations of migratory fish, including the nationally rare and endangered Allis Shad.
- 4.59 The River Wye is also designated as a SAC and SSSI. The Wye Valley Woodlands SAC is some 4.8km west of the site. The Wye Valley and Forest of Dean Bat Sites SAC is some 4.8km west of the site. There are also other SSSIs within some 8km of the site as shown on Figure 5.
- 4.60 The Oldbury Power Station Silt Lagoons 1 and 2 are designated as a non statutory Site of Nature Conservation Importance (SNCI) (Figure 5).

Protected and Otherwise Notable Species

- 4.61 The presence of protected and otherwise notable species at the Oldbury location (or the potential for the presence of such species) has been identified on the basis of a desk study and inspection of the site. Subsequent surveys for badger, amphibians, reptiles, bats and breeding birds have been carried out in 2009. A preliminary survey of wintering estuarine

birds has also been undertaken. Given that it can't be ruled out at this early stage, an ecological survey has been undertaken from public vantage points for a potential construction haul route between the site and Sharpness Docks .

4.62 The surveys have confirmed the presence of the following protected species on the site:

Badger	four main badger setts and other outlier setts were found within the site boundary.
Great crested newt	present in eleven of the fourteen water bodies surveyed within the site.
Other amphibians	smooth newts were present in thirteen of the fourteen ponds surveyed.
Reptiles	A survey of suitable reptile habitat in agricultural land within the site boundary, principally coarse grassland, scrub, and some field margins and hedge boundaries, identified low populations of slow worm along the flood bank adjacent to the River Severn, and around the farm buildings at Worthy Farm. Single grass snakes were recorded at a ditch in the north of the site, and in the area of Worthy Farm.
Bats	A total of eight possible bat species were recorded foraging and/or commuting across the site during surveys of derelict farm buildings in the south west of the site in June, July and August 2009. These were common and soprano pipistrelle, long-eared, noctule, Leisler's, Serotine and Myotis species (probably Natterers and whiskered / Brandt's). Only common pipistrelle and long-eared bats were recorded roosting within buildings.
Breeding Birds	A range of bird species were recorded breeding within the survey area, including 13 species of conservation concern. Additional species, including a further 10 species of conservation concern, were recorded using or passing over the site but were not deemed to be breeding. Key habitats used by breeding bird species on site included scrub, woodland, trees and hedgerows.
Wintering Birds	The preliminary survey identified four high tide roosts on grassland at the northern edge of the survey area, at the silt lagoons 1 and 3, and at a small marina located to the south of the existing Oldbury Power Station. Numbers of birds were generally low, although a peak count of 120 curlew represents around 3% of the SPA population. Several large groups of wigeon and teal were present throughout the survey period. The tidal reservoir and the marina bay were used by a number of species for feeding as the tide began to ebb.

4.63 Information on other species likely to be present has been obtained from available sources.

Otter and water vole

4.64 There are records of otter some 3km to the south of the site, close to the Severn Estuary at Littleton Brick Pits. The watercourses present on site provide potentially suitable habitat for both otter and water vole.

Marine mammals

- 4.65 There are records of common dolphin and common porpoise in the Severn Estuary within 1km of the north of the site boundary. There is a record of grey seal within the tidal reservoir within the site boundary.

Fish Community

- 4.66 The Severn Estuary and Bristol Channel complex supports diverse and abundant fish, the fish population being of a similar species composition to that of other estuaries and coastal regions in southwest England. Many of these species are marine estuarine-opportunists using the estuary as a nursery area. However, a number of important migratory species pass through the estuary, including river lamprey, sea lamprey, twaite shad and salmon. These fish pass through the estuary on their way to and from their spawning grounds in the upper reaches of the rivers and the open sea. The estuary also has the largest eel run in the country.
- 4.67 The Severn Estuary is a nursery area for many species of fish. The nursery areas tend to be concentrated around the intertidal mudflats and in the upper estuary in the vicinity of the salt wedge at the limit of the marine influence of the rivers. Very few fish are dependent on the deep-water channel for their food, due to the low density of invertebrate fauna in this location.

Potential Effects and Mitigation

Designated Sites

- 4.68 There is the potential for impact on the designated sites due to the proposal for cooling water infrastructure - intake ('make-up') and discharge ('purge') pipework and structures as well as through construction and operation of a marine offloading facility (MOF) which could be constructed within the designated sites. Preliminary discussions on these sensitive aspects of the project have already begun with the relevant statutory bodies and are ongoing at the time of writing the scoping report.
- 4.69 The key potential ecological effects are those that could affect the internationally and nationally designated sites in the Severn Estuary. Consideration of potential impacts and opportunities for mitigation can be considered jointly for these designations.

Estuarine Habitats and Invertebrates

- 4.70 The cooling water system required for the stations would need to abstract water from the River Severn to provide top up supplies. It is likely that the cooling water would be taken from the tidal lagoon currently operated by the present Magnox station which is within the Severn Estuary SPA, SCI, Ramsar site and SSSI. Abstraction would require new pipework and construction of intake and discharge structures within the designated areas. This could mean a temporary loss of habitat and disturbance of tidal flows around the construction works which in turn could impact on invertebrate communities. In the very dynamic estuarine environment such impacts would be likely to be short term and the habitats and ecology would recover following construction.
- 4.71 Whilst the discharge of cooling water in the intertidal area has the potential to cause an adverse effect, the thermal discharge from a tower cooled system would be much less than the existing Oldbury Power Station's discharge.
- 4.72 Modelling studies would be carried out to establish the size and temperatures of the cooling system discharge and the dispersion of the thermal plume following discharge.
- 4.73 Water quality sampling and analysis will comprise a range of parameters to be agreed with relevant authorities. Discussion and agreement with the Environment Agency will ensure that

appropriate parameters are tested for the purposes of assessment under Water Framework Directive Environmental Quality Standards for Annex IX (Dangerous Substances Directive and associated daughter directives) together with Annex X (Water Framework Directive Priority List Substances), where applicable. This will feed in to EIA requirements for consideration of physico-chemical attributes (which includes temperature and nutrient characteristics for both water quality assessment and the subsequent influence this might have on biological populations; i.e. assessment of the potential for effects on ecological status.

- 4.74 The construction of the new power station would require the transport of significant quantities of bulk materials such as fill material, aggregates, steel and concrete. Additionally, several abnormally large components or modules would need to be delivered by sea. Delivery of the bulk materials and the abnormal loads could mean that a marine offloading facility (MOF) may be required.

Fish

- 4.75 The Severn Estuary supports a diverse range of fish and is considered a major fish migration route. Water abstraction could potentially cause an adverse effect (and even some mortality) due to fish impingement on cooling water screens, or entrainment in the cooling water intake (e.g. lamprey transformers). The thermal discharge could also affect fish populations in the vicinity of the discharge.

Wintering Waterfowl

- 4.76 Construction and ultimate decommissioning would entail a number of potentially noisy and visually intrusive activities which, although not necessarily within the designated areas, may be in close proximity. They could therefore result in some displacement of wintering bird populations during the construction period.
- 4.77 The station development area, the need for any new construction roads and modifications to the transmission system could result in the loss of feeding and roosting area for birds on land adjacent to the Severn Estuary SAC, SPA, Ramsar and SSSI areas. Even though these areas lie outside the internationally designated area, this has some potential for affecting bird populations using the estuary.
- 4.78 If not properly managed, damage to intertidal habitats could also affect over wintering bird populations which feed in the shallows and the sandbanks due to loss of food sources.

River Wye

- 4.79 The only interest feature of the River Wye SAC and SSSI which could potentially be affected by a new power station at Oldbury would be the migratory fish species which pass through the Severn Estuary to spawn in the River Wye.

European Protected Species

- 4.80 European protected species which have been recorded at the site, or are likely to be present are great crested newt, bats and otter.

Other Protected Species

- 4.81 Other protected species recorded or likely to occur at the site include other amphibians, reptiles, badger, water vole, breeding birds, wintering birds and terrestrial invertebrates. Appropriate measures to protect these species during construction, the subsequent operation, and the eventual decommissioning of the proposed power station will form part of the proposals.

- 4.82 The fish community of the Severn Estuary includes species of importance in the context of the designation of the Severn Estuary candidate SAC and Ramsar site, and the River Wye SAC. Mitigation for potential effects on estuarine habitats which support these fish would be as for the Severn Estuary SCI and Ramsar site. In particular, timing of the construction programme may need to avoid migration/ spawning events. It would be necessary to use measures such as screens/fish return systems, and acoustic fish deterrents at water intakes.

Ecological Mitigation and Management Plan

- 4.83 The requirements for mitigation and management of ecological resources in relation to the construction and operation of a new nuclear power station at Oldbury (revised as appropriate in the light of full ecological surveys of the site) would be incorporated into a comprehensive Ecological Mitigation and Management Plan for the project. This is likely to form part of a Landscape and Biodiversity Masterplan and will ensure that the measures proposed are clearly identified and specified.

Further Studies and Assessment

- 4.84 The proposed new nuclear power station at Oldbury has the potential to affect a number of designated sites and protected species. Of particular importance to the designated sites in the Severn Estuary is the potential for effects on estuarine habitats and the associated invertebrate populations, fish and wintering waterfowl.
- 4.85 In order to characterise the ecology of the site sufficiently to inform the EIA, i.e. to provide the baseline information to enable the identification of the likely significant effects of the proposals, and to enable such effects to be avoided, mitigated or compensated for, further ecological surveys are programmed to provide the necessary data. These include:

Terrestrial Ecology

- Phase 1 Habitat survey (to verify existing information);
- National Vegetation Classification (NVC) – selected habitats ;
- Hedgerows;
- Trees;
- Wintering birds;
- Otter and Water vole;
- Badger (bait marking survey);
- Invertebrates;
- Bats
- Reptiles; and
- Amphibians.

Aquatic Ecology

- Water quality (seasonal);
- Plankton including lamprey transformers (seasonal);
- Intertidal benthic survey, initially a Phase 1 biotope survey followed by Phase 2 survey to collect infaunal data for soft sediment biotopes and to establish future monitoring sites;
- Subtidal benthic survey for sediment chemistry, particle size analysis (PSA) and benthic infauna;

- Epibenthic invertebrate survey; and
 - Fish survey
- 4.86 Consultation with key stakeholders, including Natural England, the Environment Agency, CEFAS, Avon Wildlife Trust the RSPB, and the Wildfowl and Wetland Trust, will help to refine the survey programme and to establish the baseline conditions.

Archaeology and Cultural Heritage

Existing Situation

- 4.87 There are 35 Scheduled Monuments within 10 km of the proposal site (see Figure 6). These include a number of small prehistoric forts mainly on elevated sites to the south and south-east, a Roman temple on the higher ground to the west of Lydney, and Offa's Dyke running parallel with and just to the east of the River Wye. There is also an enclosed prehistoric settlement within the village of Oldbury.
- 4.88 There 10 Grade I and 30 Grade II* listed buildings (or groups of listed buildings) are located within 10 km of the site. None of these are closer than 3.5 km. Several are churches and many of the remainder are farmhouses. Berkeley Castle is a Grade I listed building, as is Thornbury Castle. Berkeley Castle Gardens are Grade II* listed. The Severn Bridge and Aust Viaduct (the First Severn Crossing) is also a Grade I listed structure.
- 4.89 There are 70 Grade II listed buildings within 5 km of the site. These include ten buildings to the east and north-east of the site and within 1 km of the site boundary. One Conservation Area lies (partially) within 5km radius of the site. This is at Thornbury, and includes the Castle and the historic part of the village.

Documentary Research

- 4.90 An assessment of the current documentary resource has previously been undertaken based upon a 1.5 km radius centred upon the site. This has been reported, including a gazetteer of identified sites, and should be consulted for detail. This assessed the built and buried heritage potential of the site. The following presents the concluding summary of findings.
- 4.91 No archaeological sites or finds dating from the prehistoric, Roman or early medieval periods have been positively identified within the nomination boundary. However, the potential for these to exist has been established through the identification of similar sites within the immediate surroundings where it has previously been possible to investigate the archaeological horizons of preservation buried within the sediment sequence.
- 4.92 The settlements at Manor Farm and Worthy Farm are likely to have a later medieval origin, as do the ridge and furrow earthworks that extend over much of the area. A ditch aligned across the centre of the nomination area may have been in existence in the later medieval period. The farm complexes at Worthy Farm, Jobsgreen Farm, Dairy Farm and Manor Farm include a number of farm buildings of post-medieval date in various states of preservation.
- 4.93 It should be noted that in addition to the known and potential archaeological resource discussed above, the nomination area includes within its boundary significant elements of the historic built environment (both Listed and non-Listed) which form part of a historic landscape with a high degree of coherency and articulation, and a significant time-depth. The individual elements of the historic landscape within the nomination boundary include the fields and lanes defined by the hedgerows, the ridge and furrow earthworks, and the small, dispersed farming settlements.

Potential Effects and Mitigation

- 4.94 The development of a nuclear power station at Oldbury has the potential to adversely affect buried archaeological remains that may be present within the proposed site boundary. Any such remains could be removed or truncated during construction of the power station and ancillary structures, and/or related infrastructure. Buried waterlogged archaeological remains may be indirectly affected by changes in the hydrogeology within or close to the site boundary that result from construction.

- 4.95 It is possible that there would be some effects on archaeological remains within the intertidal and marine environments. Again these could be direct effects arising from construction activities or indirect effects resulting from changes to the hydraulic regime within the estuary caused by the development.
- 4.96 There could also be effects on the settings of designated cultural heritage resources including historic buildings, historic landscapes and archaeological sites. Such effects would principally be the result of visual effects. The significance of any effects on the settings of designated cultural heritage resources would depend on the type of reactor and associated cooling systems that are selected, and the mitigation measures that can be implemented.
- 4.97 There is potential for some development activities away from the nuclear site development area as described in section 2, this may for example include a marine off-loading facility) MOF as well as additional mitigation or lay down area. The effects of these elements will be considered within the EIA.

Further Studies and Assessment

- 4.98 Additional baseline data would be acquired wherever necessary, relating to the known and potential cultural heritage resources within a study area of appropriate size centered on the proposal site. The study area would include the inter-tidal zone and the estuary where appropriate.
- 4.99 The resources examined would include nationally designated features such as Scheduled Monuments, listed buildings and Registered Parks and Gardens, locally designated features such as Conservation Areas, Areas of High Archaeological Potential (or equivalent), locally listed buildings, locally designated parks and gardens etc., archaeological sites and find-spots recorded on the relevant local authorities' sites and Monuments Records (SMRs) and Historic Environment Records (HERs) and on the National Monument Records of England and Wales, historical cartographic sources, 'Important Hedgerows' as defined using the archaeological/historical criteria in the Hedgerows Regulations (1997), and the overall historic landscape.
- 4.100 Sources would include the National Monuments Records of England and Wales, English Heritage, Cadw, the Sites and Monuments Records maintained by South Gloucestershire Council, the Bristol Record Office and the Gloucestershire Archives.
- 4.101 Existing and available geological and geotechnical information would be examined, along with the data obtained by specialists looking at other aspects of the proposed development.
- 4.102 Site surveys would be undertaken to identify previously unrecorded sites of potential interest.
- 4.103 For buried archaeological remains and 'Important Hedgerows' a 1.5km study area would be used.
- 4.104 For the purposes of assessing the impact on the setting of historic environment resources the study areas would be based on the following best practice parameters:
- 5 km radius centred on the site for historic environment resources of regional significance (Grade II Listed Buildings, Conservation Areas, locally designated 'listed buildings', locally designated 'Historic Parks and Gardens', etc.);
 - 15 km radius centred on the site for historic environment resources of national significance (Scheduled Monuments, Grade I and II* Listed Buildings, Grade I and II* Registered Parks & Gardens, Registered Battlefields, Landscapes of Outstanding Historic Interest, etc); and
 - 35 km radius centred on the site for historic environment resources of international significance (World Heritage Sites).

For the purposes of the assessment of off-site infrastructure, an appropriate study area would be agreed with the relevant authorities once the location of the infrastructure has been determined.

- 4.105 For the 5 km, 15 km and 35 km radii study areas only those resources falling within the defined Zone of Visual Influence (ZVI) would be assessed.
- 4.106 National guidance on planning and the historic environment will be reviewed, along with relevant local and structure plan policies.
- 4.107 Those to be consulted will include the following organisations and individuals:
- South Gloucestershire Council Archaeology Officer;
 - Gloucestershire County Council County Archaeologist;
 - South Gloucestershire Council Conservation Officer;
 - English Heritage; and
 - Cadw (regarding Landscapes of Outstanding Historic Interest)
- 4.108 The results of the baseline data collation will be discussed with the archaeological advisor to the local planning authority and English Heritage when appropriate). The main aim of the discussion will be to appraise the quality of available information and to decide if further evaluation in the form of archaeological fieldwork (intrusive or non-intrusive, or a staged approach combining both methodologies), would be required as part of the EIA process. If necessary, archaeological surveys would be undertaken as appropriate in order to identify the nature and significance of any buried remains that may be affected by the proposed development.
- 4.109 Any archaeological fieldwork would be undertaken by specialist subcontractors. The project designs would be prepared and agreed with the archaeological advisor to the local planning authority and English Heritage if appropriate, prior to the appointment of any subcontractor.

Traffic and Transport

- 4.110 A Transport Options Study (TOS) will consider the likely requirements of construction, operation and eventual decommissioning for any new power station at Oldbury. It will also consider as far as is practicable the likely cumulative aspects due to the decommissioning of the existing power station and other projects in the area. The TOS will then propose a feasible transport plan based upon road, estuary and rail based solutions that would meet these requirements. The output of the TOS will provide the starting point for the EIA process. Green travel initiatives will also be considered as part of this work.
- 4.111 In the EIA process, a Transport Assessment will be developed which will examine the impacts of the various options and will form the basis for a Construction Workers Travel Plan and a Construction Traffic Management Plan to implement the preferred traffic and transport solution.
- 4.112 Relevant statutory bodies will be consulted during this work, and views will be sought from the public and other interested bodies as part of ongoing engagement as well as the more formal consultation processes.

Existing Situation

Road

- 4.113 The M5 motorway from Exeter to Birmingham lies approximately 8km due east of Oldbury-on-Severn and is the principal major trunk road access to the area managed by the Highways Agency. Junction 14 on the M5 near Falfield is the nearest motorway junction to the proposed power station. In addition the A38 runs close to and immediately west of the M5 between Bristol and Gloucester. This route is managed by the local highway authority.
- 4.114 West of the M5/A38 corridor most of the roads are un-classified. However, visual inspection has shown that those that provide access to the existing Oldbury power station are reasonably wide and lightly trafficked and thus the principle of vehicle movements to the vicinity of the site is established. There are isolated properties on some of the routes.

Rail

- 4.115 The Severn Beach Line is a local, mainly passenger line, about 15kms south west of Oldbury-on-Severn, near the Second Severn Crossing, running from Bristol (Narrowways Hill Junction) to Severn Beach. Passenger trains run from Bristol Temple Meads to Severn Beach via nine local stations. The line carries very little freight traffic, with most of the heavy freight traffic to Avonmouth Docks being routed via the Henbury loop through Filton. The line has been identified by Thomas Cook as one of the scenic lines of Europe. There is a further rail head around 9km to the north east at Sharpness Dock (see below). Bristol Parkway is the nearest mainline station, approximately 20km from the site.

Sea

- 4.116 Sharpness Dock handles ships of up to 6,000 (with cargo), maximum beam 16.76m, maximum draught 6.5m and unlimited length. Sharpness has road and rail links. The port is experienced in handling a diverse range of cargoes including dry bulks, minerals, timber and many other products, using modern quay-transfer equipment and has extensive open and covered storage.

Potential Effects and Mitigation

- 4.117 Two distinct phases, namely construction and operation, will be considered.
- 4.118 The construction of a new power station at Oldbury would involve the need for large quantities of construction material to be transported to site together with some very large components.

In addition a very sizeable work force would be required. Good access for construction is therefore essential. The local statutory authorities will seek a high level of use of sustainable transport modes for the movement of both construction materials and workforce.

Workforce

- 4.119 An initial assumption has been made of a peak workforce of up to 3,500 for construction of one reactor and up to around 6,000 for two units. The Transport Assessment will be refined later when a decision has been made on the type and number of reactors to be built. It is unlikely that all of these workers would be permanently resident in the commutable catchment area and a considerable number would require long distance transport access on a daily basis or temporary accommodation more locally.
- 4.120 There are two broad approaches to transporting construction workers to and from site:
- i) To provide un-restricted access. This solution would require land to be made available for parking at Oldbury and would result in potential pressure on the local road network through a daily influx of several thousand workers and their vehicles. Additional pressure would also be experienced on the M5, particularly around Junction 14.
 - ii) To provide a managed access strategy that both restricts the amount of parking available at the construction site and provides alternative modes of transport to the private car for site access.
- 4.121 Once operational, and depending upon the reactor technology chosen, the power station is expected to employ up to 800 people, including those working a shift system.

Construction materials

- 4.122 A considerable tonnage of construction materials together with plant, machinery, equipment and components will need to be transported to the site of the new power station. Some of the components will be very large. Again, a number of potential options are available:
1. Transport by road using the M5 and the local road network.
 2. Some construction materials could come in by rail to Sharpness Docks. It is unlikely to be feasible to extend the rail network to Oldbury so the alternative would be to complete the journey from Sharpness to the site by road.
 3. Sharpness Docks could handle water borne deliveries of some of the larger components and possibly bulk construction materials with the final delivery to the site being made by road.
 4. A marine off loading facility (MOF) at Oldbury.
 5. A modal transport split to relieve potential pressure on the local road network with the largest materials and components being delivered by sea via a MOF, some in by rail to Sharpness Docks or by sea to the docks and some being delivered by road.
- 4.123 Once operational, there will be a small volume of deliveries and the very occasional replacement of plant and machinery.

Further Studies and Assessment

- 4.124 A Transport Assessment will be developed as part of the EIA for the new nuclear power station. The Transport Assessment will examine all potential modes and routes for construction workers, materials and components in to the site and will result in a Construction Workers Travel Plan and Construction Traffic Management Plan to implement the preferred access strategy.

- 4.125 The local highway authority will be consulted with reference to the local road network (including the A38) and the Highways Agency with respect to the M5, M48 and M4. The consultation will determine the extent of the road network to be included within the Transport Assessment that will be appended to the EIA.
- 4.126 Network Rail will be consulted with respect to potential rail freight access via Sharpness.
- 4.127 Victoria Group (owners of Sharpness Docks) will be consulted with respect to off loading facilities at the docks.
- 4.128 The Transport Assessment will identify a suitable modal split for both construction workers and materials and components in to the site.
- 4.129 For the road network in the study area identified, traffic counts will be taken on all the routes affected using automatic traffic counters (ATC's) and manual classified counts (MCC) for key junctions to determine the volume and modal split of vehicular use. Existing traffic data from the roads in question will also be obtained from the local highway authority and Highways Agency where available and the future growth of traffic taken into account. Particular attention will be given to capacity issues, length of queuing and junction layouts to determine where improvements and / or demand management will be required and what form they will need to take. An investigation of the historical accident record will also be undertaken.
- 4.130 An abnormal loads study will also be required to assess the feasibility of the travel routes from the port of entry or trunk road network to the site. This will assess the ability of loads (with swept path analysis) to use the routes and identifying any potential pinch points where mitigation measures will be required (such as temporary widening, bridge strengthening, or removal of street furniture) in respect of condition and alignment.
- 4.131 Using the outline construction phasing plan that will be developed, the Transport Assessment can then determine the impact on the highway network and sensitive receptors (such as residential dwellings and schools) taking into account peak construction activities and the timing of abnormal loads.
- 4.132 The EIA will examine the implications of the principal transport measures identified for construction workers, materials and abnormal loads.

Noise and Vibration

Existing Situation

- 4.133 Other than the existing Oldbury Nuclear Power Station to the south, the site is essentially in a rural setting and the existing noise environment is likely to be typical of that expected in a rural location but including noise from distant traffic and agricultural activities. The M4 Motorway is some 7km to the south and the M5 some 8km to the east. The nearest town is Thornbury, some 4km to the south east.
- 4.134 Noise sensitive receptors in the area surrounding the proposed new power station comprise a number of farmhouses and other dwellings. The northern edge of the settlement of Oldbury Naite is approximately 1km to the south west of the site, and Oldbury-on-Severn is some 1.5km to the south. Shepperdine borders the site to the north east. Subject to the findings of the transport assessment, other settlements will potentially be affected by noise arising from construction traffic.
- 4.135 Baseline noise monitoring will be undertaken at representative noise sensitive receptors and concurrent meteorological data will also be recorded. South Gloucestershire Council will be consulted to agree the extent of the baseline noise monitoring and to agree the appropriate noise limits for the development. Consideration would also be given to the potential for noise effects at properties on the west shore of the estuary since attenuation of noise over water is much less than over land. Subject to preliminary consideration of the likelihood of effects, this will be discussed with Forest of Dean District Council.

Potential Effects and Mitigation

- 4.136 The construction operations, including earthworks, flood protection measures, any improvements to existing roads, and construction of the new power station itself, will involve the deployment of much mobile plant. As for any such major construction operation, efficient silencing equipment would be fitted to all vehicles and machinery on site where possible, and this would be maintained in accordance with the manufacturer's recommendations. However, the nature of the operations means that it is not possible to control noise from mobile plant as effectively as for fixed installations. The locations of the work areas over the construction site will change through the course of the construction.
- 4.137 In order to assess these effects information will be required on the existing noise environment in the area, and on:
- Construction traffic movements;
 - Workforce transport movements;
 - Rail movements;
 - Marine transport movements; and
- 4.138 It is likely that there will be a significant increase in road traffic during construction. Once traffic has left the M4 and M5, roads most likely to be affected are the A38 and then local roads leading to the site. The Transport Assessment would assess the most appropriate route for construction traffic (and subsequent operational traffic) from the A38. As for any major project, it is likely that a Travel Plan would be agreed with South Gloucestershire Council. This would be intended to minimise traffic impact and would in turn control the consequent effects of noise.
- 4.139 The Transport Assessment would also consider the options for transport of construction materials and components by rail and sea. To the extent that use of these modes of transport may be feasible and adopted, then any associated noise effects would be assessed.

- 4.140 There are also potential noise effects during the operation of the new power station, such as that arising from the cooling water system (for example, pumps, any fans and the noise generated by water passing through the cooling towers), and from the transport of supplies and the permanent workforce.
- 4.141 Appropriate measures for mitigation will be determined based on the findings of the noise impact assessment. Clearly all site equipment, plant and vehicles will be required to meet the noise performance standards which are current at the appropriate time.

Further Studies and Assessment

- 4.142 The requirements for ambient noise monitoring (the extent, monitoring locations, and time period) would be agreed with South Gloucestershire Council (and if necessary Forest of Dean District Council) and the necessary monitoring undertaken.
- 4.143 This data would form the baseline for the noise impact assessment. The assessment of construction noise would follow the guidance contained in BS 5228: 2009: "Code of practice for noise and vibration control on construction and open sites", which defines prediction methods and source data for various construction plant and activities. The assessment would use predictive noise calculations and modelling based on noise propagation data for typical construction plant, and also more site specific data including a construction programme which would identify working times for site plant, daily construction traffic movements, daily workforce travel arrangements, and any rail or marine-based transport.
- 4.144 Noise from the operation of the power station would be assessed on the basis of the guidance set out in BS 4142:1997 "Method for rating industrial noise affecting mixed residential and industrial areas."
- 4.145 The Calculation of Road Traffic Noise methodology would be used to assess the noise effects of both construction and operational traffic on local roads.
- 4.146 A computer noise model would be developed to assess the significance of the various 'operational' noise sources.

Air Quality and Dust

Existing Situation

4.147 Data on existing air quality would be obtained from the UK Air Pollution Information System (APIS) website (www.apis.ac.uk), and the UK Air Quality Archive (www.airquality.co.uk). This information can be supplemented with reference to historical monitoring campaigns undertaken in the study area or by undertaking a study specific monitoring campaign. In the case of this assessment sufficient existing data is available from public sources to gain an indication of background air quality. However, if necessary this could be supplemented by a monitoring programme at the site.

Potential Effects and Mitigation

4.148 The construction of the proposed new power station has the potential to affect air quality in the vicinity. The way in which equipment and material will be transported to site will influence the emissions from traffic on the local road network. The potential for transport of some materials and components by rail and sea could potentially reduce the need to use the local roads. If this is found to be practicable then the emissions associated with rail freight haulage and from ships would also need to be considered.

4.149 In order to assess these effects information will be required on the existing air quality in the area, and on:

- Construction traffic movements;
- Workforce transport movements;
- Rail movements;
- Marine transport movements; and

4.150 There are potential operational effects of the proposed nuclear power station on air quality arising from transport (employees and suppliers); use of diesel engines to power emergency generators and emissions from the generators. Other potential sources of air emissions will be identified through the design process.

Further Studies and Assessment

4.151 An assessment of the potential air quality impact of emissions from construction, and daily worker traffic on access roads would be undertaken based on a construction programme setting out daily Heavy Goods Vehicle (HGV) and workforce transport movements. This would enable an assessment of the air quality impact at roadside properties and any areas of sensitive habitats along those routes to be made.

4.152 The construction programme would also identify the extent of any proposed rail and marine transport of materials and/or plant. The requirement for and scope of any assessment of the air quality impact of emissions associated with these transport modes would then be determined.

Public Access and Recreation

- 4.153 The site for the proposed new Oldbury nuclear power station lies approximately 1km north west of the the northern edge of the settlement of Oldbury Naite and approximately 1.5km to the north of Oldbury-on-Severn. Sheppardine borders the site to the north east and Thornbury, the nearest town, is some 4km to the south east. There are a number of public rights of way within and close to the site, and there is a nature trail associated with the existing Oldbury Nuclear Power station to the south.
- 4.154 Whilst a number of these rights of way would be affected by the proposed new development, opportunities to enhance public access and recreation overall would be considered. This would be one of the areas in which public comment would be sought in addition to statutory bodies (South Gloucestershire Council) and interested parties (such as the Ramblers Association).

Existing Situation

- 4.155 The Severn Way long distance footpath runs along the flood bank bordering the Severn Estuary within the western part of the site (see Figure 7) and to the south passes between the existing Oldbury Power Station and the estuary (which in this section comprises the power station's tidal reservoir). The Severn Way is a waymarked 337km footpath and is the longest river walk in Britain, tracing the route of the Severn, from its source at Plynlimon to the sea at Bristol. Further afield are the Offa's Dyke and Cotswold Way long distance footpaths.
- 4.156 A public bridleway links to the Severn Way to form a circular route around the existing power station. The northern part of this bridleway, where it runs to the north of the power station's former silt lagoons, is within the site of the proposed power station.
- 4.157 Four public footpaths enter the northern part of the site from Sheppardine Road. These link within the site to a single footpath which enters the south of the site at Jobsgreen Farm, where this footpath also links to the circular bridleway referred to above. A further footpath enters the site from Sheppardine Road to the east site and links to the other paths within the site.
- 4.158 There is a network of Public Rights of Way within the surrounding land, including two bridleways which run eastwards from the northeast corner of the site (one of which is named Harestreet Lane).
- 4.159 The existing power station maintains a nature trail that gives access to areas of interest and links to the Severn Way long distance footpath. The station promotes seasonal walks along the footpath and encourages public access.
- 4.160 There are no formal recreational facilities in the immediate vicinity. Recreation is generally informal, and is predominantly walking and bird watching.
- 4.161 Berkeley Castle (some 9km to the north east) is the closest important visitor attraction.

Potential Effects and Mitigation

- 4.162 The Severn Way long distance footpath may need to be diverted during the construction. It is likely that it would be re-instated on approximately its present alignment on completion of construction. Bridleways and footpaths would also be affected and footpaths within the site would be permanently closed. Where practicable, alternative routes/diversions would be provided.
- 4.163 South Gloucestershire Council and the Ramblers Association as well as other interests and the public would be fully consulted on any proposals to close or divert public rights of way. All

such temporary or permanent closures/diversions would be advertised well in advance, and would be clearly signposted.

- 4.164 Opportunities would be sought to provide enhancements to the existing recreation/education resources in the area by provision of visitor recreation and interpretation facilities, and additional nature trail provisions to complement those already in place at the existing power station.
- 4.165 It is unlikely that the proposed new power station would have any significant effects on Berkeley Castle's importance as a visitor attraction given that it is only about 2km from Berkeley Nuclear Power Station, and the existing Oldbury station is only a little further away from the castle than the proposed new power station. However, the new power station would be visible from the castle, and it would be important to assess the degree of visual impact.

Further Studies and Assessment

- 4.166 An assessment of the level of use of the rights of way within and around the site of the proposed new power station will inform the evaluation of their importance as a recreational resource, and the assessment of the significance of the potential impacts of their closure and/or diversion.

Socio-economics

- 4.167 The assessment of socio-economic effects will address those associated with employment provision, the changes to the population/demographics of the area due to employees moving to the area from further afield, and effects on public services and facilities. Potential effects on existing commercial uses in the Severn Estuary, particularly fisheries and navigation, will also be assessed, as will the effects on agriculture.

Existing Situation

- 4.168 The overall picture revealed by the baseline assessment is one of a relatively prosperous and growing economy. This is indicated by above average population rates, relatively low levels of unemployment, high skills levels and education attainment and above average earning levels. Levels of deprivation and crime are also low and in many areas decreasing.
- 4.169 Oldbury is located in a highly accessible part of the UK in close proximity to the strategic road network (M5/ M4). Unlike many current or prospective nuclear power station sites, it is therefore relatively accessible although its immediate surroundings are characterised by small towns and rural areas. With the City of Bristol being some 24 km away, the local economy is relatively open to people seeking work opportunities from outside the Study Area when more people are likely to travel further in search of secure employment following the recession.
- 4.170 Historically, this sub region centred on Bristol has been a driver behind productivity growth in the South West region benefiting from a concentration of high technology manufacturing and well paid business services activity. Its underlying strengths are reflected in the relatively high levels of gross value added per capita supporting higher levels of earnings in the area.
- 4.171 Commercial fishing activity in this section of the Severn Estuary is regulated by the Environment Agency. The Severn Estuary has fishing grounds for a wide range of species, including bass, mullet, eel and salmon. The greatest fishing effort is from North Devon and Swansea, landing a range of species from skate to bass. However, there is a large commercial salmon fishing area along the coast of Wales from Cardiff to Magor. The Rivers Usk and Wye feeding into the Severn Estuary are both important salmon rivers that help support this fishery.
- 4.172 The Gloucester Harbour Trustees is the competent harbour authority for Gloucester. The Gloucester Harbour covers a large area of the Severn Estuary and includes the tidal reaches of the Rivers Severn and Wye. Its outer limit is seawards of the Second Severn Crossing and its inner limits end at the weirs at Llanthony and Maisemore on the River Severn near Gloucester and Bigsweir Bridge on the River Wye.
- 4.173 Traffic within the Gloucester Harbour includes commercial vessels arriving at and departing from Sharpness Dock. Cargoes include scrap metal, grain, cement, fertiliser, forest products, coal and stone. The remainder of the traffic comprises leisure craft, although there are at least two sand dredgers operating within the Gloucester Harbour on a regular basis. The Gloucester and Sharpness Canal links Sharpness Docks with Gloucester Docks and the rest of the inland waterway system.

Potential Effects and Mitigation

- 4.174 The types and duration of employment will vary throughout the construction and operation of the new power station and reduced operation, maintenance and decommissioning of the existing power station. These changes will be set out in a Direct Employment Labour Curve.
- 4.175 Indirect employment associated with the purchase of services or goods down the supply chain as a result of the proposals, and induced employment addressing local expenditure by those who will gain income from the proposals will also be assessed.

- 4.176 Employees are likely to be drawn from both the local area and from further afield. When employees relocate from further afield to the local area, this can change the size of the population and its demographics. Where populations increase, this can place pressure upon local services and facilities such as schools and hospitals. Therefore effects on the population, demographics, and services and facilities will be assessed.
- 4.177 The proposals may include park and ride facilities for construction staff, and the need to provide any further measures such as worker accommodation and local employment and training packages will be investigated. The nature of employment associated with the proposals will be taken into account such as anticipated shift working and the operator's approach to sub contracting.
- 4.178 The study areas will be determined in consultation with the local authority. The areas for construction and operation would need to take into account the Daily Commuting Zones. Construction workers tend to be willing to travel long distances daily, potentially extending to 90 minutes commuting time each way, and therefore the Construction Daily Commuting Zone will reflect this. The Operation Daily Commuting Zone will reflect a smaller geographical area as permanent employees are more likely to locate nearer to their work. The study areas will also need to take account of administrative boundaries to reflect the coverage of the available data.
- 4.179 Potential effects on agricultural production within the site will be assessed. The effects will be considered in terms of effects on the operation of any individual farm holdings affected, and also in terms of the contribution that the agricultural land within the site may make towards agricultural production as a whole within the local area and wider region.
- 4.180 The planning policy context relevant to this topic will be set out.

Further Studies and Assessment

- 4.181 The baseline study will comprise information about the existing situation and how it would change in the absence of the proposals. It will address employment at the site, labour market characteristics, population/demographic characteristics and information about the housing stock and existing services and facilities.
- 4.182 Data, other than those relating to the employment levels at the site, will be obtained from the following sources:
- UK National Statistics website - Census (the last Census was undertaken in 2001), NOMIS and Neighbourhood Statistics
 - South Gloucestershire Council and adjacent authorities as appropriate
 - South West Regional Development Agency (SWRDA)
- 4.183 The assessment will compare the proposals against the baseline situation. The determination of the significance of effects will be qualitative. It will take into account the magnitude of the change and, in relation to employment, the importance of this issue to the area (for example, as set out in planning policies), and in relation to housing/accommodation and services and facilities, the proximity to or exceedance of any limiting factors such as housing availability and school capacity.

5 Health, Safety and Security

Health and Safety

- 5.1 Under the Health and Safety at Work etc. Act 1974 employers are responsible for ensuring the safety of their workers and the public. Safety is further reinforced for nuclear power station sites by the Nuclear Installations Act 1965 (NIA65), as amended. Under the NIA65 a nuclear site licence will be required from the Health and Safety Executive's (HSE's) Nuclear Installations Inspectorate (NII) for the purposes of installing or operating a nuclear installation. The NII sets out in conditions attached to a site licence the general safety requirements to deal with the risks on a nuclear site. Licensees can comply with licence conditions in a number of ways; e.g. with a safety case to meet a stage in the plant's life, or with arrangements and procedures to meet a licence condition.
- 5.2 The aim of a nuclear safety case is to describe how an adequate standard of safety is achieved and to quantify the 'risk' posed by a site, plant and equipment or specific operations. The NII through its licensing powers assesses safety cases and inspects sites for nuclear licence compliance.
- 5.3 It is considered that aspects of information contained within the ES will help inform the safety case.
- 5.4 The design, procurement, construction, commissioning and operation of the new Oldbury power station will include processes and modern best practices that will ensure that the statutory responsibilities of the company for the health and safety of all its employees and others affected by its activities are maintained. Plant and equipment will be kept in a condition which is safe and without risk to health and be examined and tested in accordance with statutory requirements.
- 5.5 In addition the EIA will take into account aspects of the Construction (Design and Management) Regulations 1994 where appropriate.

Security

- 5.6 The Office for Civil Nuclear Security (OCNS) regulates nuclear security requirements at civil nuclear sites. The HSE will not grant a licence until it is assured that appropriate measures are in place to manage both physical and information security.
- 5.7 Before construction of the nuclear power station can begin a construction security plan must be approved by the OCNS. The construction security plan sets out the management arrangements in place in to maintain an appropriate security regime during all phases of construction.
- 5.8 Once construction and commissioning is substantially complete, the construction plan will evolve into a Site Security Plan which will apply as the facility moves into the operational phase. The Site Security Plan must be approved in advance by the OCNS. This plan describes the physical security arrangements in place to protect the nuclear power station site and any radioactive materials e.g. fencing, CCTV, and the roles of security guards and the Civil Nuclear Constabulary (CNC) etc. The plan also covers security arrangements to protect sensitive nuclear information and IT systems.
- 5.9 As security arrangements include the disclosure of information relating to the proposed power station at Wylfa this will have to be taken into account when preparing the environmental statement. The ES will therefore not disclose specific details of the security measures that are

taken or information of a sensitive nature. Security related infrastructure e.g. security fencing, lighting will however be assessed. It is considered that any limits on the disclosure of information will not affect the robust nature of the EIA...

6 The Way Forward

Environmental Impact Assessment

- 6.1 This Scoping Report identifies the proposed way forward for the assessment of the likely environmental effects arising from the development of a new nuclear power station at Oldbury. As explained in sections 3 and 4, many of the surveys and investigations necessary to provide the baseline data for the assessment of effects have already been carried out or are in progress. The remainder will be commissioned as the programme of work progresses. These surveys and investigations are summarised in Table 3.

Table 3: Summary of surveys and investigations to inform the EIA.

Topic	Surveys and investigations
Geology, hydrogeology and soils	<p>Assessment of the depths of topsoil and subsoil resources on the site through a reconnaissance survey of soil types. This will enable a soil management strategy to be produced</p> <p>Desk Based Assessment of geotechnical and ground engineering issues, soil contamination, geology and hydrogeology, geomorphology.</p> <p>Analysis of existing borehole and sample data, with further investigations as required, to characterise the hydrogeological regimes, potential ground contamination and any remediation requirements.</p>
Surface water and flooding	Full and detailed Flood Risk Assessment
Landscape and visual amenity	<p>Assessment of landscape character and visual resources from desk study and field survey.</p> <p>Valued landscape and visual resources will be identified at international, national and local levels within the study area which is taken to be up to 35 km from the proposed site boundary.</p>
Ecology and nature conservation	<p>Further ecological surveys to characterise the ecology of the site. These will include:</p> <p>Terrestrial Ecology</p> <ul style="list-style-type: none"> • Phase 1 Habitat survey (to verify existing information); • National Vegetation Classification (NVC) – selected habitats; • Hedgerows; • Trees; • Wintering birds; • Otter and Water vole; • Badger (bait marking survey); • Invertebrates; • Bats; • Reptiles; and

Topic	Surveys and investigations
	<ul style="list-style-type: none"> • Amphibians (for GCNs) <p>Estuarine Ecology</p> <ul style="list-style-type: none"> • Water quality (seasonal); • Plankton (seasonal); • Intertidal benthic survey, initially a Phase 1 biotope survey followed by Phase 2 survey to collect infaunal data for soft sediment biotopes and to establish future monitoring sites; and • Subtidal benthic survey for sediment chemistry, particle size analysis (PSA) and benthic infauna.
Archaeology and cultural heritage	<p>Collection of additional baseline data relating to known and potential cultural heritage resources.</p> <p>Existing and available geological and geotechnical information would be examined.</p> <p>Site surveys would be undertaken to identify previously unrecorded sites of potential interest.</p> <p>If necessary, additional archaeological surveys would be undertaken.</p>
Traffic and transport	<p>A Transport Master Plan will be developed which will examine all potential routes for both construction workers and materials and components in to the site.</p> <p>A full Transport Assessment will be prepared.</p> <p>Traffic counts will be taken on all the routes which would be affected.</p> <p>An abnormal loads study will be undertaken.</p>
Air quality and dust	<p>Data on existing air quality would be obtained from the UK Air Pollution Information System (APIS) website (www.apis.ac.uk), and the UK Air Quality Archive (www.airquality.co.uk). If necessary this would be supplemented by a monitoring programme at the site.</p> <p>An assessment of the potential air quality impact of emissions from construction and daily worker traffic on access roads would be undertaken, as would the effects of any rail or marine transport of materials.</p>
Noise and vibration	<p>The requirements for ambient noise monitoring will be agreed with South Gloucestershire Council (and if necessary Forest of Dean District Council) and the necessary monitoring undertaken.</p> <p>An assessment of construction noise will be undertaken using predictive noise calculations and modelling based on noise propagation data for typical construction plant, and also more site specific data.</p> <p>Noise from the operation of the power station will be assessed.</p> <p>The Calculation of Road Traffic Noise methodology will be used to assess the noise effects of both construction and operational traffic on local roads.</p>
Public access	Assessment of the level of use of the rights of way within and around the

Topic	Surveys and investigations
and recreation	site of the proposed new power station to inform the evaluation of their importance as a recreational resource, and the assessment of the significance of the potential impacts of their closure and/or diversion.
Socio-economic	Baseline study to obtain information about the existing situation and how it would change in the absence of the proposals. It will address employment at the site, labour market characteristics, population/ demographic characteristics and information about the housing stock and existing services and facilities. Potential effects on agriculture, commercial fisheries, and Sharpness Docks will also be assessed.

- 6.2 The design of the power station will proceed in parallel with this work and will be informed by the environmental information emerging through the EIA, and also through the consultation process.

Consultation

- 6.3 Consultation is an essential part of the EIA process as it provides a means of identifying relevant information, and helps to inform the requirements for baseline surveys and other assessments. Consultees (statutory bodies, non-statutory bodies and the public) will also have a valuable part to play in helping to influence particular aspects of the development as development proposals take shape. Engagement and consultation will therefore be a key part of the EIA process.
- 6.4 In September 2009, the Government published its Guidance on Pre-application Consultation which is associated with the new IPC planning regime (through the Planning Act 2008). The key principles are set out in paragraphs 8 - 12 of the guidance, which is available to download from the IPC's website <http://infrastructure.independent.gov.uk>.
- 6.5 A Statement of Community Consultation (SOCC) will be drawn up in consultation with the local authority. This will set out how, in the context of the Planning Act 2008, consultation will be carried out in relation to the proposal for a new nuclear power station at Oldbury. Any future application to the IPC would also need to include a Consultation Report which sets out the results of the formal consultation.
- 6.6 Notwithstanding the formal requirements for consultation as required by the new Planning Act 2008, E.ON has already embarked on a process of engagement with relevant statutory and non statutory bodies and the public, and this process will be continued by Horizon Nuclear Power the joint venture company.
- 6.7 In preparing the scoping report, discussions have been held or are ongoing with a number of different organisations, including the following:
- South Gloucestershire Council
 - Gloucestershire County Council
 - Stroud District Council
 - Forest of Dean District Council
 - Natural England
 - Environment Agency

English Heritage

Marine and Fisheries Agency (MFA) of DEFRA

CEFAS

As set out above, a full programme of engagement and consultation with these and other key stakeholders will be developed as the EIA process continues.

- 6.8 Other engagement activities to date have included local public exhibitions, a drop-in surgery event as well as presentations to other key stakeholders such as the Parish Council and South Gloucestershire Council. In addition, a manned freephone number has been established, together with an e-mail address and website. Newsletters have also been distributed in the local area to keep residents aware of developments. The process will continue to be developed by Horizon Nuclear Power and will be enhanced as plans are developed and the EIA work gets underway. The process of engagement and consultation will also be widened to take account of the public and other interests on both sides of the estuary.

Appropriate Assessment

- 6.9 Regulation 5 (1) of the Infrastructure Planning (Applications and Procedure) Regulations 2009 (S.I. 2009 No.2263) requires applications under the Planning Act 2008 for development consent to be accompanied by:

'(vii) any report identifying any European site to which regulation 48 of the Conservation (Natural Habitats, & c.) Regulations 1994(b) applies, or any Ramsar site, which may be affected by the proposed development, together with sufficient information that will enable the Commission to make an appropriate assessment of the implications for the site in accordance with regulation 48(1)'.

- 6.10 For European designated sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA), and as a matter of UK Government policy, Ramsar sites), where there is the likelihood of a significant effect then an appropriate assessment must be carried under the Conservation Natural Habitats etc Regulations 1994 (the Habitats Regulations) to determine whether there would be an effect on the integrity of the site. This appropriate assessment would be carried out by the competent authorities responsible for consenting the development, in this case the IPC.
- 6.11 BERR (now DECC) has prepared a Habitats Regulations Assessment Screening Report (BERR 2008), the purpose of which is to consider whether the Nuclear National Policy Statement (NPS) could have significant effects on European Sites. The report concluded that the Strategic Site Assessment criteria, whilst including criteria designed to avoid impacts on European designated sites, are not able to guarantee that there will be no significant effects on such sites. Significant effects could not be ruled out on the basis of objective information, so it was considered that further Habitats Regulations Assessment (a screening exercise) should be undertaken once sites have been nominated based upon the SSA criteria.
- 6.12 The screening exercise would identify those sites which are likely to impact upon European Sites and may thus require an Appropriate Assessment. Depending on the outcome of the screening exercise, it may be necessary to conduct an Appropriate Assessment of the Nuclear NPS focussing on those nominated sites for which the potential for significant effects cannot be ruled out.
- 6.13 Such an assessment is required where the proposals would:
- give rise to the probability or risk of significant effects on the European site concerned; or

- in the light of the precautionary principle, cannot be excluded on the basis of objective information from having significant effects on the European site.

6.14 Subject to the findings of this strategic level appropriate assessment, it is likely that appropriate assessment of the proposals for a new Oldbury nuclear power station will be required for the relevant European Sites. All of the information necessary to inform the appropriate assessment will be included in the ES.

Have Your Say

As part of the formal scoping process, the Infrastructure Planning Commission will consult a number of statutory bodies to obtain their comments on the content of this scoping report.

Separately, Horizon Nuclear Power would be interested in the views of other organisations and the public, and you can make your comments to Horizon Nuclear Power as follows:

By e-mail to: oldburyenquiries@eon-uk.com

By post to: fao Tim Proudler, Planning and Consents Manager, Horizon Nuclear Power Ltd (Oldbury), 5210 Valiant Court, Gloucester Business Park, Hucclecote, Gloucester, GL3 4FE

If you do provide a response to Horizon Nuclear Power and you feel that some or all of it should be treated in confidence, then please clearly state that in your response and the reasons why. Please be aware that Horizon Nuclear Power may be legally required to hand over information we receive to others (such as the Infrastructure Planning Commission), and as a result we cannot give an assurance that confidentiality can be maintained in all circumstances.

Any comments to Horizon Nuclear Power should be received by **31 December 2009**.

Consultees

The IPC will formally consult with a number of statutory and other bodies, and this is likely to include the following:

Prescribed Consultee	Relevant Consultee
The relevant Regional Planning Authority	South West Regional Assembly (South West Councils)
The Health and Safety Executive	The Health and Safety Executive
The relevant Strategic Health Authority	South West Strategic Health Authority
Natural England	Natural England
The Historic Buildings and Monuments Commission for England	The Historic Buildings and Monuments Commission for England
The relevant fire and rescue authority	Avon Fire and Rescue Service Headquarters

The relevant police authority	Avon and Somerset Constabulary
The relevant parish council	Oldbury Parish Council
The Environment Agency	The Environment Agency
The Commission for Architecture and the Built Environment	The Commission for Architecture and the Built Environment
The relevant Regional Development Agency	South West Regional Development Agency
The Equality and Human Rights Commission	The Equality and Human Rights Commission
The Commission for Sustainable Development	The Commission for Sustainable Development
AONB Conservation Boards	Cotswolds Conservation Board
The Homes and Communities Agency	The Homes and Communities Agency
The Joint Nature Conservation Committee	The Joint Nature Conservation Committee
The Commission for Rural Communities	The Commission for Rural Communities
The Maritime and Coastguard Agency	The Maritime and Coastguard Agency
The Marine and Fisheries Agency	The Marine and Fisheries Agency
The Civil Aviation Authority	The Civil Aviation Authority
The Highways Agency	The Highways Agency
Integrated Transport Authorities (ITA's) and Passenger Transport Executives (PTE's)	Has not been established for this area
The relevant Highways Authority	South Gloucestershire Council
The Rail Passengers Council	The Rail Passengers Council
The Disabled Persons Transport Advisory Committee	The Disabled Persons Transport Advisory Committee
The Coal Authority	The Coal Authority
The Office of Rail Regulation and approved operators	The Office of Rail Regulation and approved operators
The Gas and Electricity Markets Authority	OfGEM
The Water Services Regulation Authority	OfWAT
The relevant waste regulation authority	South Gloucestershire Council
The relevant internal drainage board	Lower Severn Internal Drainage Board
The British Waterways Board	The British Waterways Board
Trinity House	Trinity House
The Health Protection Agency	The Health Protection Agency
The relevant local resilience forum	Avon and Somerset Local Resilience Forum
Relevant Statutory Undertakers	Relevant Statutory Undertakers
The Crown Estate Commissioners	The Crown Estate Commissioners
The Forestry Commission	The Forestry Commission England

Local Authorities (s.43)	South Gloucestershire Council
	Forest of Dean District Council
	Gloucestershire County Council
	Stroud District Council
	Bristol City Council
	Monmouthshire County Council
	BANES
	Wiltshire County Council
	Cotswolds District Council

Please note that this is not the comprehensive list and may be subject to change.

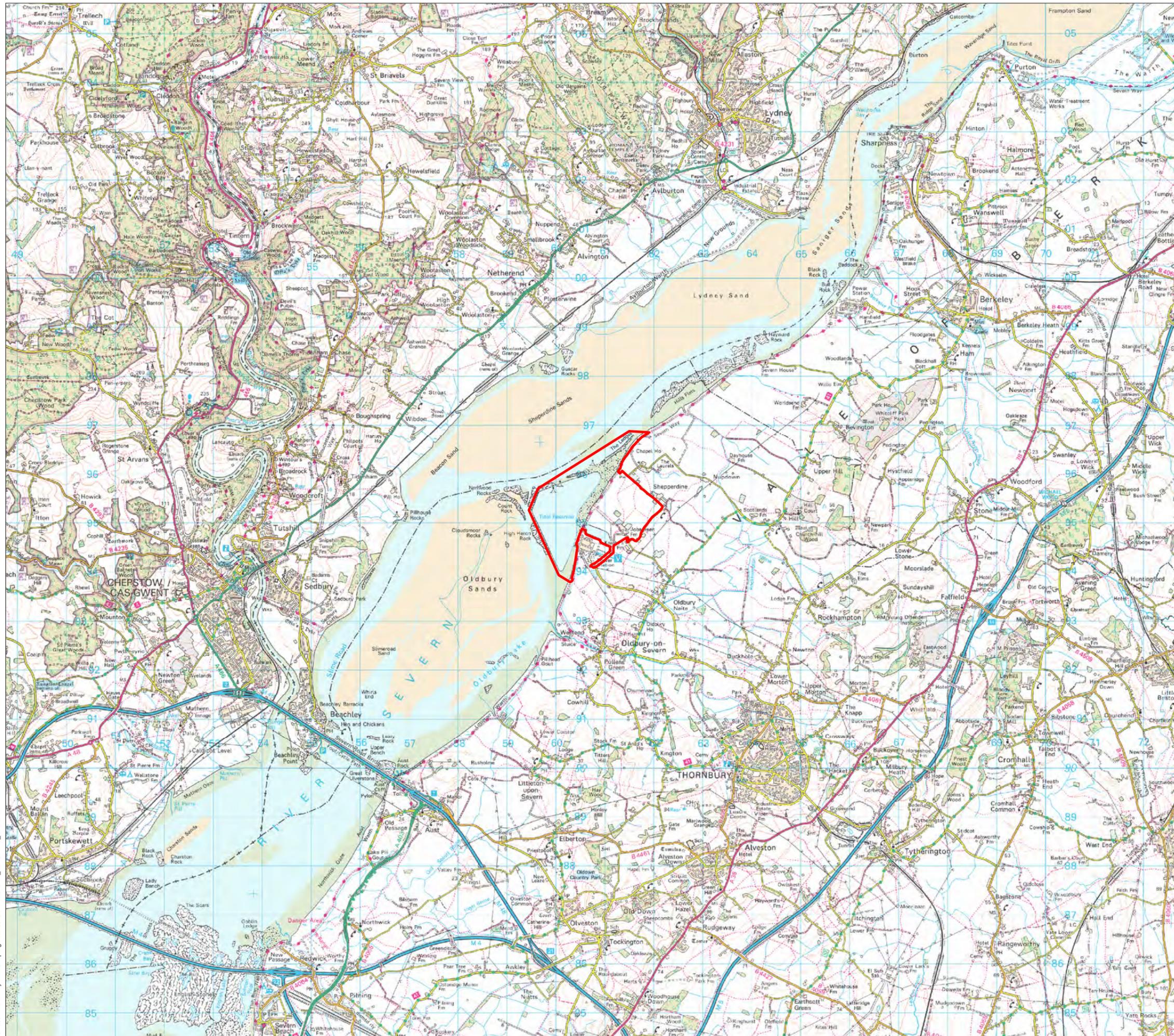
Horizon Nuclear Power have, in addition provided copies of the Scoping Report to a number of organisations, some of whom will also be consulted in due course by the IPC. A list of which is provided below at the time of going to print:

Avon Wildlife Trust
Berkeley Town Council
British Horse Society
CEFAS
Civil Nuclear Constabulary
CPRE Avonside
English Heritage
Environment Agency
Glamorgan Gwent Archaeological Trust (GGAT)
Gloucester Harbour Trustees
GWE Business West (area Chamber of Commerce)
Highways Agency
Health & Safety Executive
Lower Severn Internal Drainage Board
Marine Management Organisation (MMO)
National Ramblers Association (National)
National Trust (Local)
Nuclear Decommissioning Authority
National Grid
Natural England
Oldbury Parish Council
Oldbury Power Station
Oldbury Power Station Site Stakeholder Group (SSG)
Royal Yachting Association (RYA)
RSPB
Severn Estuary Partnership
Sevenside Ramblers
Sharpness Docks
Slimbridge Wildfowl & Wetlands (WWT)
South Gloucestershire Council
South West Regional Development Agency (SWRDA)
Thornbury Museum / Thornbury History Society
Thornbury Sailing Club
Thornbury Town Council
Alvington and West Lydney
Aust Parish Council
Aylburton
Falfield Parish Council
Ham and Stone Parish Council
Hamfallow Parish Council
Hewelsfield and Woolaston Parish Council
Hill Parish Council
Hinton Parish Council
Rockhampton Parish Council
Tidenham Parish Council

References

- Ref 1 Department of Environment Transport and the Regions (DETR), Circular 2/99 – Environmental Impact Assessment (1999)
- Ref 2 Council Directive No 85/337/EEC on the assessment of certain public and private projects on the environment (the EIA Directive), as amended by Council Directive No 97/11/EC
- Ref 3 Environmental Agency (2002): EIA Scoping Guidelines, Environment Agency, Bristol
- Ref 4 Oldbury Power Station: Environmental Statement (in Support of the Application to Decommission Oldbury Nuclear Power Station as Required by Statutory Instrument 1999 No. 2892: Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended)
- Ref 5 Department of Trade and Industry: 'The Energy Challenge' Energy Review Report 2006
- Ref 6 Department of Trade and Industry: A White Paper on Energy, 'Meeting the Energy Challenge', May 2007
- Ref 7 Department of Trade and Industry (2007) The Future of Nuclear Power, The Role of Nuclear Power in a Low Carbon Economy – Consultation Document, May 2007
- Ref 8 Department for Business, Enterprise and Regulatory Reform, 'Meeting The Energy Challenge' A White Paper on Nuclear Power, January 2008
- Ref 9 DECC (2009) The UK Low Carbon Transition Plan: National Strategy for Climate Change and Energy, July 2009
- Ref 10 HSE and Environment Agency (2008) New Nuclear Power Stations Generic Design Assessment - A Guide to the Regulatory Process, Version 2, August 2008. <http://www.hse.gov.uk/newreactors/ngn01.pdf>
- Ref 11 Department of Trade and Industry (2008) Towards a Nuclear National Policy Statement, Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the IL, July 2008
- Ref 12 Department of Energy and Climate Change (2009) Towards A Nuclear National Policy Statement Government Response To Consultations On The Strategic Siting Assessment Process And Siting Criteria For New Nuclear Power Stations In The UK; And To The Study On The Potential Environmental And Sustainability Effects Of Applying The Criteria Annex C: Guidance For Nominators Office For Nuclear Development.
- Ref 13 Nuclear Industry Association (2008) Justification Application New Nuclear Power Station, Volume 1 Application Including additional information requested on behalf of the Justifying Authority through a Notice under Regulation 16 of the Justification of Practices Involving Ionising Radiation Regulations 2004
- Ref 14 Department of Energy And Climate Change (2008) The Justification of Practices involving ionising radiation regulations 2004 – Consultation on the nuclear industry association's application to justify new nuclear Power stations, Volume 1: Consultation Document, December 2008.
- Ref 15 DEFRA, BERR and the Devolved Administrations for Wales and Northern Ireland (2008). A Framework for Implementing Geological Disposal. UK Government White Paper, Cm 7386, June 2008
- Ref 16 Committee on Radioactive Waste Management (CoRWM) (2006) Managing our Radioactive Waste Safely – CoRWM's Recommendations to Government, CoRWM Doc 700, July 2006
- Ref 17 Department for Communities and Local Government (2006) Environmental Impact Assessment: A Guide to Good Practice and Procedures

Figures



Legend
 Permanent Development Area

Other land may be required for construction and access and/or potential ancillary developments

Rev:	Date:	Amendment:	Name:	Checked:

■ Data Source: RPS 2009
 Status: FINAL



Mallams Court 18 Milton Park Abingdon Oxon OX14 4RP
 T 01235 821888 F 01235 820351 E rps@ox.rpsgroup.com W www.rpsgroup.com

■ Client: E.ON
 Project: Oldbury Scoping Report

Title: Site Location

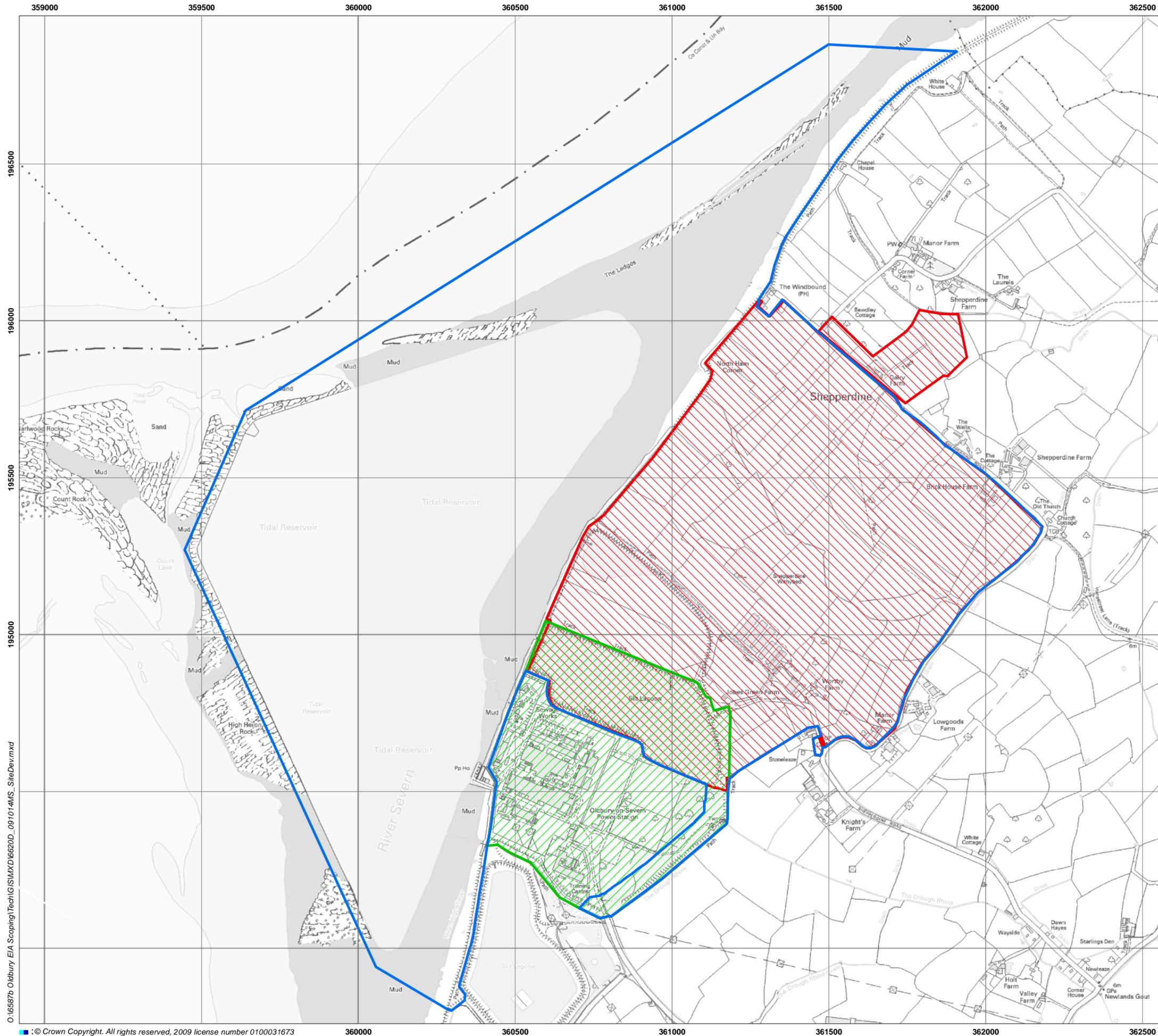
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Date: Nov 2009 Datum: OSGB36 Projection: BNG
 Drawn: MP Checked: MR Job Ref: JR6587

■ Figure No: 1 Revision: A

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Legend

- Area within which the power station would be constructed
- Existing Station (Licensed Site Boundary)
- Land Included in Nomination

Other land may be required for construction and access and/or potential ancillary developments

Rev.	Date	Amendment	Name	Checked

■ Data Source: RPS 2009

Status: FINAL



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T 01235821888 F 01235820351 E rps@rpsgroup.com W www.rpsgroup.com



■ Client: E.ON

Project: Oldbury Scoping Report

Title: Licensed Site, Permanent Development and Land Nominated

Scale: A3 @ 1:12,000



0 100 200 300 400 500 m

N

Date: Nov 2009 Datum: OSGB36 Projection: BNG

Drawn: CA Checked: GM Job Ref: JR6620

■ Figure No: 2 Revision: -

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Legend

-  Cooling systems
-  Reactor buildings
-  Turbine hall and ancillary buildings
-  Substations and electrical
-  Settling pond
-  Car parking
-  Area within which the power station would be constructed

Rev.	Date	Amendment	Name	Checked

Data Source: RPS 2009
 Status: FINAL



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Client: E.ON
 Project: Oldbury Scoping Report

Title: Illustrative AP1000 reactor design site layout
 Scale: NTS

Date: Nov '09 Datum: OSGB36 Projection: BNG
 Drawn: RM Checked: Job Ref: JR6620

Figure No: 3a Revision:

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Legend

-  Cooling systems
-  Reactor buildings
-  Turbine hall and ancillary buildings
-  Substations and electrical
-  Settling pond
-  Car parking
-  Area within which the power station would be constructed

Rev:	Date:	Amendment:	Name:	Checked:

■ Data Source: RPS 2009
 Status: FINAL



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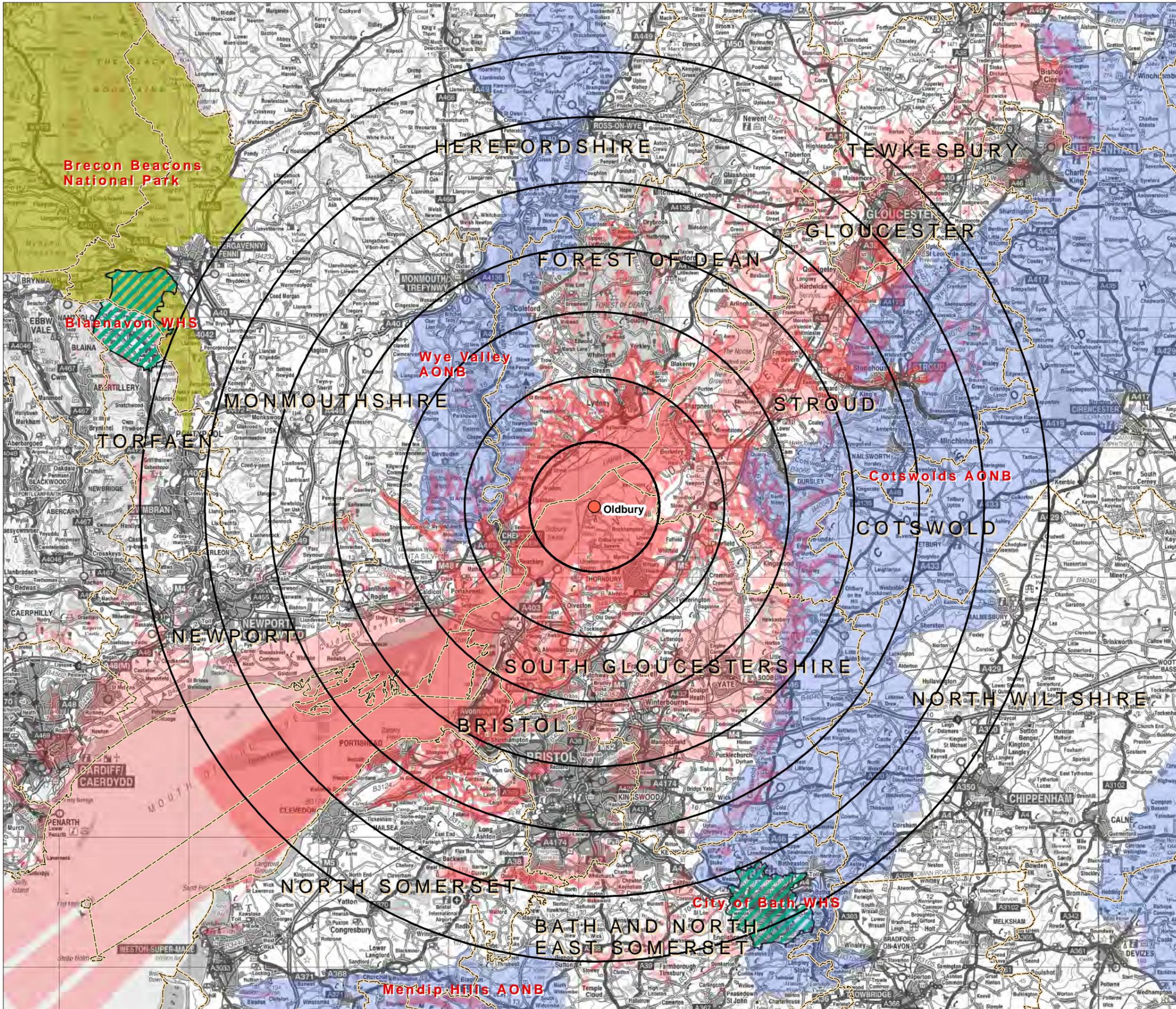
■ Client: E.ON
 Project: Oldbury Scoping Report

Title: Illustrative EPR reactor design site layout
 Scale: NTS

Date: Nov '09 Datum: OSGB36 Projection: BNG
 Drawn: RM Checked: Job Ref: JR6620

■ Figure No: 3b Revision:

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- Legend**
- Site
 - 5-35km radii from Site
 - LPA boundary
 - World Heritage Sites within 35km
 - Brecon Beacons National Park
 - Area of Outstanding Natural Beauty
 - ZTV to 200m High Development
 - Combined ZTV to both 70m and 200m high developments

Rev:	27/02/09	Labelling corrections	TB	CD/DC
Date:		Amendment:		Name:

■ Data Source: RPS 2009

Status: FINAL



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■ Client: E.ON

Project: Oldbury Scoping Report

Title: Landscape Areas or Features of National or International Importance (25km radius)

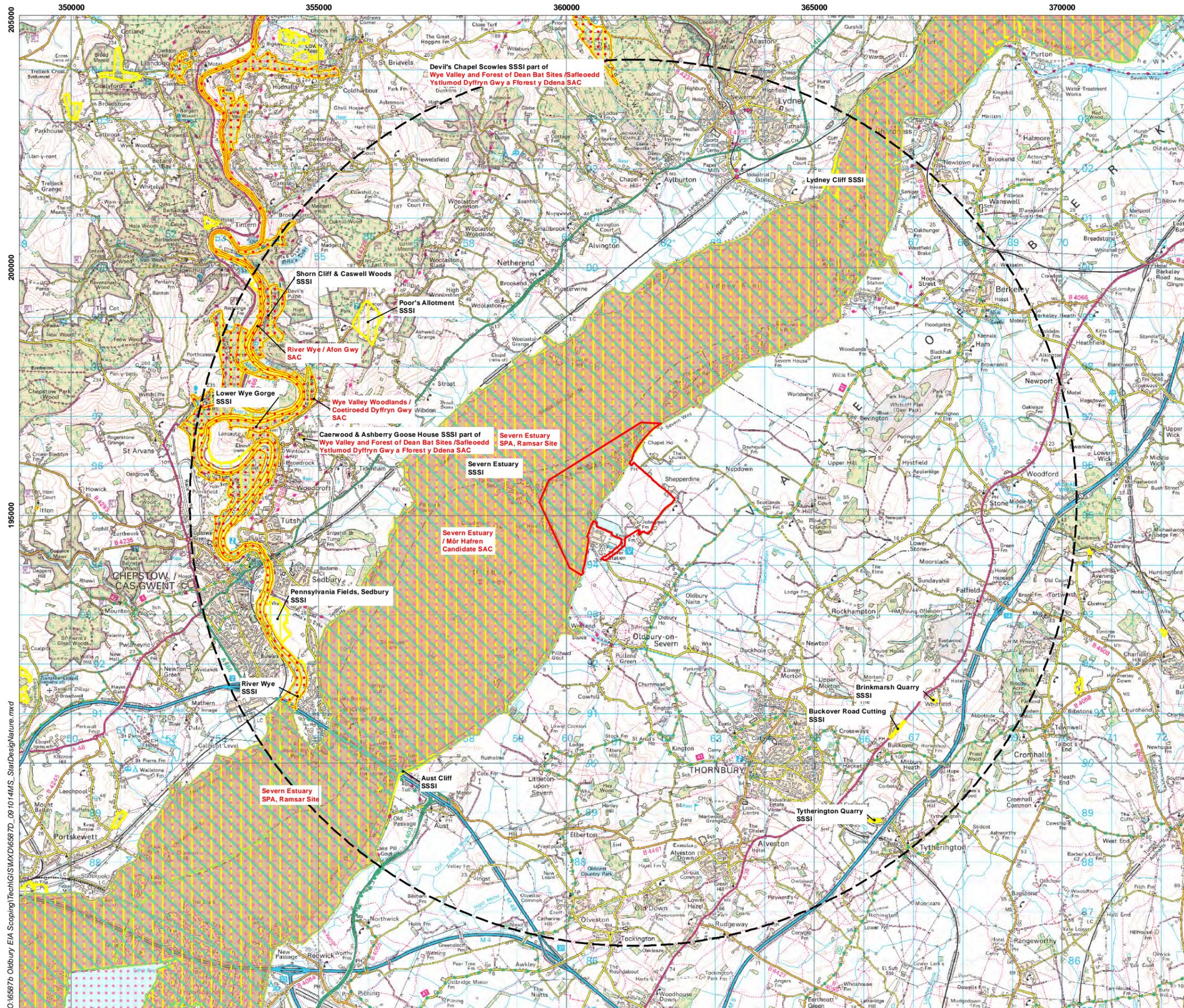
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Date: Nov 2009 Datum: OSGB36 Projection: BNG

Drawn: TB Checked: PH, MR Job Ref: JR6587

■ Figure No: 4 Revision: A

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- ### Legend
- Site boundary
 - 8km Study area (based on site boundary)
 - Special Area of Conservation (SAC)
 - Candidate Special Area of Conservation (SAC)
 - Ramsar
 - Special Protection Area (SPA)
 - Site of Special Scientific Interest (SSSI)

International Statutory Designated Sites

- Severn Estuary candidate SAC
- Severn Estuary SPA
- Severn Estuary Ramsar Site
- River Wye SAC
- Wye Valley Woodlands SAC
- Wye Valley and Forest of Dean Bat Sites SAC

National Statutory Designated Sites

- Severn Estuary SSSI
- River Wye SSSI
- Poor's Allotment SSSI
- Aust Cliff SSSI
- Lower Wye Gorge SSSI
- Pennsylvania Fields, Sedbury SSSI
- Caerwood and Ashberry Goose House SSSI
- Buckover Road Cutting SSSI
- Brinkmarsh Quarry SSSI
- Shorn Cliff and Caswell Woods SSSI
- Lydney Cliff SSSI
- Tytherington Quarry SSSI
- Devil's Chapel Scowles SSSI

Note:
A candidate Special Area of Conservation (cSAC) is a site put forward by the UK Government to the EC for approval. Once accepted by the EC, the site is referred to as a Site of Community Importance (SCI) until formally designated as a SAC by the UK Government.

Rev: Date: Amendment: Name: Checked:

■ Data Source: RPS 2009

Status: FINAL



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■ Client: E.ON

Project: Oldbury Scoping Report

Title: **Statutory Designated Nature Conservation Sites**

Scale: A3 @ 1:75,000

Date: Nov 2009 Datum: OSGB36 Projection: BNG

Drawn: TB Checked: KJ Job Ref: JR6587



■ Figure No: 5 Revision: -

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- Legend**
- Site
 - 5-10km radii from Site
 - LPA boundary
 - Listed Buildings (Grade I) within 10km
 - Listed Buildings (Grade II*) within 10km
 - Listed Buildings (Grade II) within 5km
 - Scheduled Ancient Monuments within 10km (England)
 - ▲ Scheduled Ancient Monuments within 10km (Wales)
 - Conservation Area

Project Ref: O:\62339_EON Draft SSA Criteria Appraisal\Tech\GIS\6233D_090130TB_10kmHistoricDesignations_Oldbury_revB.nczTY.mxd

Rev.	Date:	Amendment:	Name:	Checked:
A	27/02/09	Labelling corrections	TB	CD/DC

■ Data Source: RPS 2009
 Status: FINAL

RPS

e.on

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■ Client: E.ON
 Project: Oldbury Scoping Report

Title: Cultural Heritage

Scale: A3 @ 1:75,000

N

0 2 4 km

Date: Nov 2009 Datum: OSGB36 Projection: BNG
 Drawn: TB Checked: PH, MR Job Ref: JR6587

■ Figure No: 6 Revision: A



Legend

- Site boundary
- Cycle Route
- Footpath
- Bridleway

Rev:	Date:	Amendment:	Name:	Checked:

■ Data Source: RPS 2009
 Status: FINAL



Mallams Court 18 Milton Park Abingdon Oxon OX14 4RP
 T 01235 821888 F 01235 820351 E rps@rpsgroup.com W www.rpsgroup.com

■ Client: E.ON
 Project: Oldbury Scoping Report

Title: Public Rights of Way

Scale: A3 @ 1:30,000

Date: Nov 2009 Datum: OSGB36 Projection: BNG
 Drawn: TB Checked: LF Job Ref: JR6292

■ Figure No: **7** Revision: -

Project Ref: O:\2009a Oldbury Ecology - E.ON\Tech\GIS\MXDs\6292D_090109TB_Stat_&_Non-Stat\DesignatedSites.mxd